~~DRAFT~~ PHASE III RESIDENTIAL AREA SAMPLING REPORT

for the

ENGINEERING EVALUATION AND COST ANALYSIS OF THE FORMER CELOTEX SITE 2800 South Sacramento Avenue Chicago, IL 60623

Prepared for:

ALLIEDSIGNAL, INC.
MORRISTOWN, NEW JERSEY
and
THE CELOTEX CORPORATION
TAMPA, FLORIDA

JUNE 1999

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Parsons ES Project No. 730577

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INTRODUCTION

1.1 GENERAL

Parsons Engineering Science, Inc. (Parsons ES) was retained by AlliedSignal, Inc. (AlliedSignal) to perform the Engineering Evaluation and Cost Analysis (EE/CA) study for the 2800 South Sacramento Avenue site in Chicago, Illinois (the Site), on behalf of the Respondents — AlliedSignal and The Celotex Corporation. The work associated with the EE/CA is being performed in accordance with the Administrative Order by Consent (AOC) entered into between the Respondents and the United States Environmental Protection Agency (USEPA) Region V, on 1 November 1996.

Between 16 December and 21 December 1998, Parsons ES executed the Phase III Residential Area Sampling and Analysis Program (Phase III RASAP). This Phase III Residential Area Sampling Report presents the data from that Phase III field investigation and discusses the findings and implications of the data generated from the RASAP.

1.2 REPORT ORGANIZATION

This report is divided into four sections. Section 1 presents the introduction. Section 2 describes the field investigation activities that were performed as part of the Phase III sampling program. Section 3 presents the analytical data generated from the Phase III field sampling event and the findings of data validation activities. Section 4 presents the evaluation of the Phase III RASAP data within the context of all of the data that has been generated from the various phases of the residential area sampling program.

SECTION 2
FIELD INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The approach and rationale for the Phase III residential sampling program was based on the sampling approach that was outlined in the *Draft Phase II Residential Area Sampling Report* (RASR), dated August 1998. The Phase III program was implemented with the concurrence of the USEPA Region V.

As specified in Section 5 of the Draft Phase II RASR, the Respondents intended the Phase III RASAP to entail the sampling of 20 additional residential properties: 10 properties inside the area of greatest concern and 10 properties within background areas. The area of greatest concern was defined to be the foreground area within the north-north-east octant as measured from the center of the Site. Background was defined to be the area located to the west of the Site, beyond 1,200 feet from the center of the Site at which there is no evidence that soil concentrations have been affected by past Site activities. The background area that was sampled during the Phase III RASAP was between 26th and 30th Streets and between Spaulding and Christiana Avenues.

Parsons ES (on behalf of the Respondents), with significant assistance from the USEPA Region V, attempted to contact the owners of properties within the specified foreground and background areas to obtain written permission to access their properties and collect soil samples. Permission was successfully obtained for only 10 properties - six background and four foreground locations. Figure 2.1 shows the locations of the 10 residential properties sampled during the Phase III RASAP as well as the locations of the four residential properties sampled during the Phase II RASAP. The addresses of the 10 properties sampled during the Phase III RASAP are presented in Table 2.1.

Discussion of the Phase II RASAP, including the addresses of the four properties sampled as part of this program, is presented in the Draft Phase II RASR. A summary

of the field conditions and activities performed during the Phase III RASAP is presented in the next subsection.

2.2 SAMPLING ACTIVITIES

The sample collection approach used during the Phase III RASAP was identical to the approach specified for the Phase II RASAP. Parsons ES collected eight surface soil samples from each property, for a total of 80 investigative samples. All soil samples were collected as grab samples (i.e., samples from multiple locations were not composited). The soil samples were collected from a depth of 0 to 3 inches below grade. The sample collection protocol entailed the use of a decontaminated stainless-steel spoon to remove the soil material down to a 3-inch depth and placement of the removed material into a decontaminated stainless-steel bowl. Once sufficient material had been removed to fill the necessary sample containers, the soils in the bowl were homogenized using a stainless-steel spoon and then placed into the appropriate sample container(s). Field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples were collected in accordance with the requirements specified in the Phase II RASAP. A total of eight field duplicate soil samples and four MS/MSD soil samples were collected and sent to the laboratory for analysis. All sample analyses were performed by the Quanterra, Inc. laboratory located in North Canton, Ohio.

At some of the properties, soil samples were collected from areas overlain with concrete. To access the soils beneath the concrete, Parsons ES used a hand-held concrete coring machine to drill through the concrete. The soil samples were collected from the soil material beneath the concrete. Care was taken to avoid collecting samples in areas that visually appeared to be impacted, such as in the vicinity of oil staining. Concrete cored areas were repaired by Parsons ES after sampling activities were completed at the property, using cement troweled by hand. Figures 2.2 through 2.11 show the layout of the 10 properties that were sampled during the Phase III RASAP, and the benzo(a)pyrene [B(a)P] equivalent concentrations exhibited by the soil sample collected from each sample location.

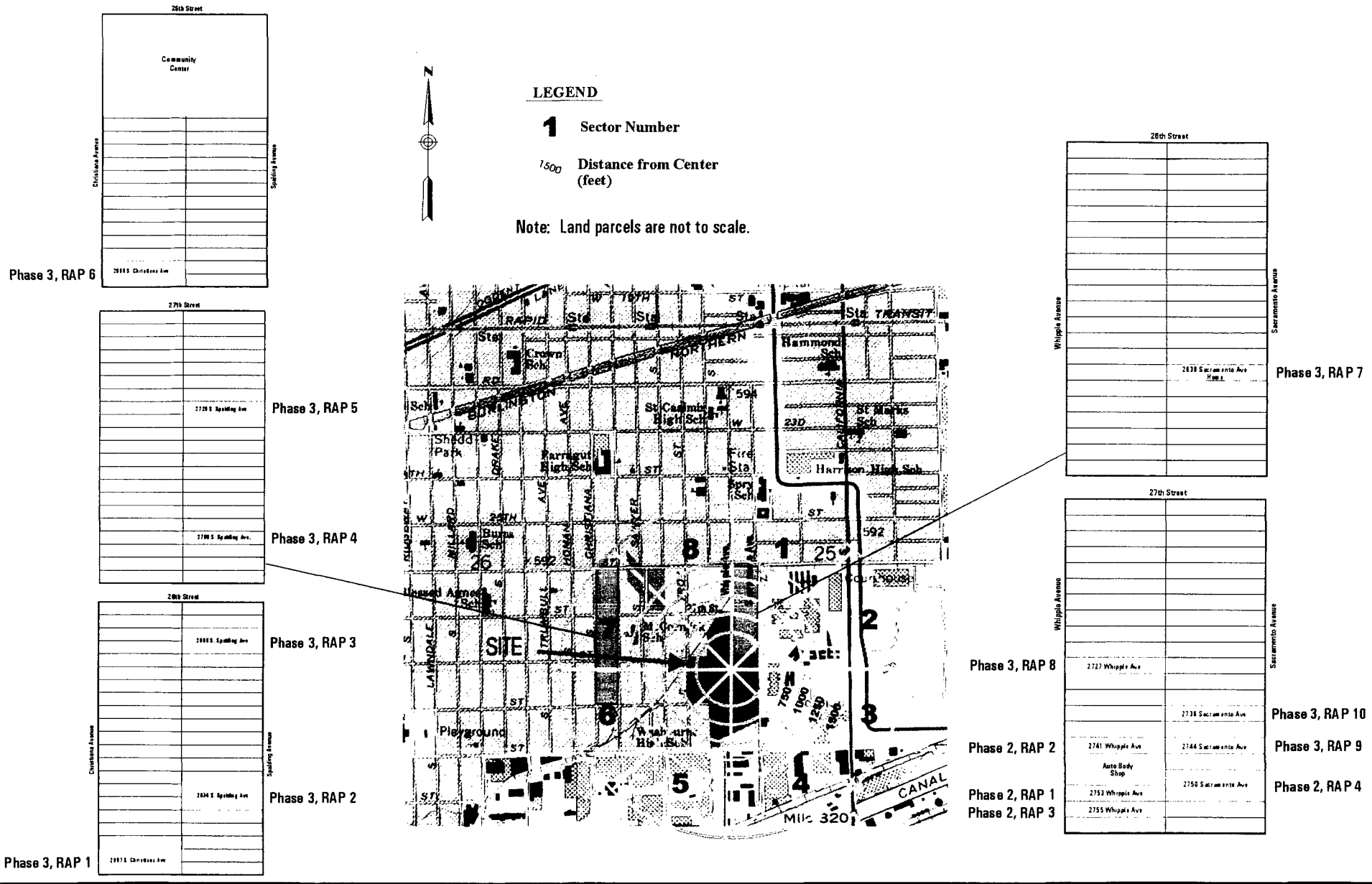

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FIGURE 2.1
SOIL SAMPLING PROPERTY LOCATIONS
AlliedSignal, Inc./The Celotex Corporation

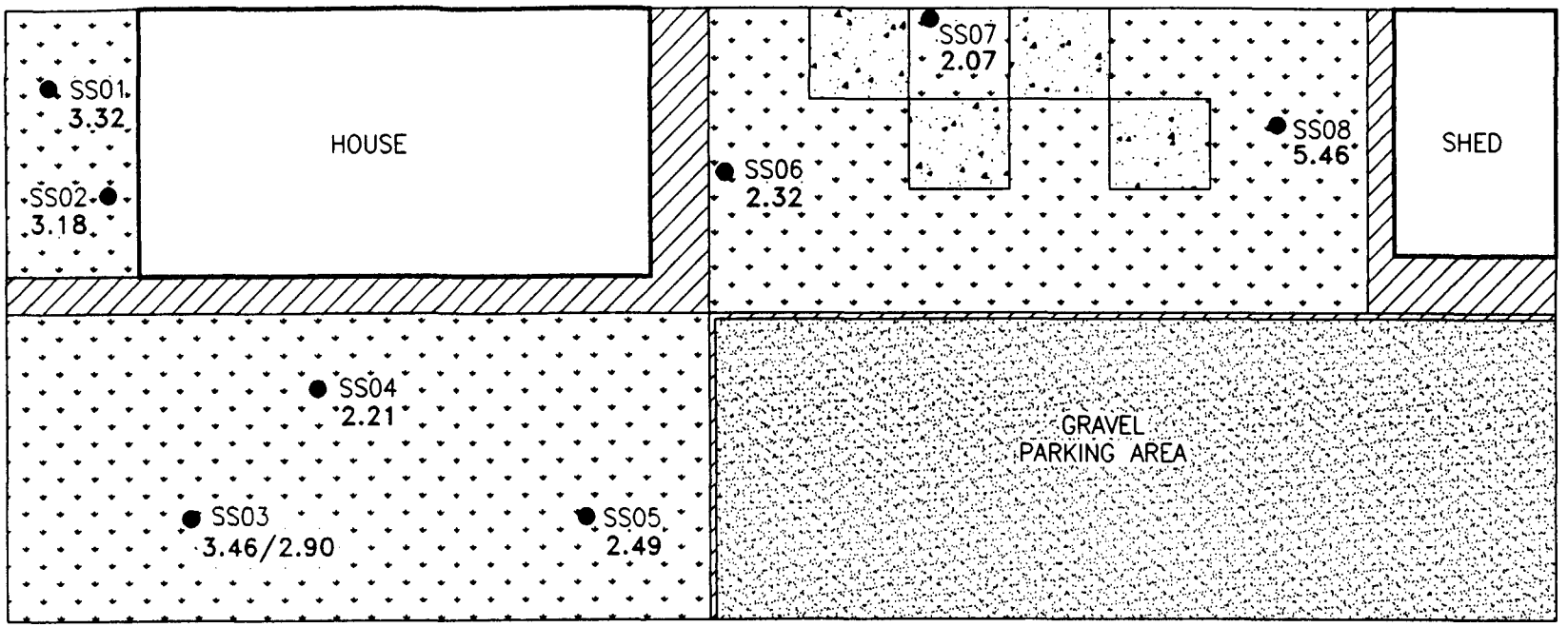
TABLE 2.1

RESIDENTIAL PROPERTY LOCATIONS FOR THE PHASE III RASAP

2800 SOUTH SACRAMENTO AVENUE SITE CHICAGO, ILLINOIS 60623

Location of Property	Soil Sample Residential Property Identifier[1]	Address of Residence
Background	RAP1	2857 S. Christiana Ave
Background	RAP2	2834 S. Spaulding Ave.
Background	RAP3	2806 S. Spaulding Ave.
Background	RAP4	2750 S. Spaulding Ave.
Background	RAP5	2726 S. Spaulding Ave.
Background	RAP6	2655 S. Christiana Ave.
Foreground	RAP7	2638 S. Sacramento Ave.
Foreground	RAP8	2727 S. Whipple Ave.
Foreground	RAP9	2744 S. Sacramento Ave.
Foreground	RAP10	2736 S. Sacramento Ave.

[1] This identifier is part of the sample name. For example: SSAS3-RAP4-SS08-0/3 refers to a soil sample collected at residential property No. 4, located at 2750 S. Spaulding Ave.



LEGEND

- SIDEWALK
- GRASS
- GRAVEL
- CONCRETE
- ● SOIL SAMPLE LOCATION
- 3.32 Benzo(a)pyrene Equivalents Concentration in mg/kg

N

0 15 30

SCALE: 1"=15'

DATE: 5/11/99 [NP]
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FIGURE 2.2

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2857 S. CHRISTIANA

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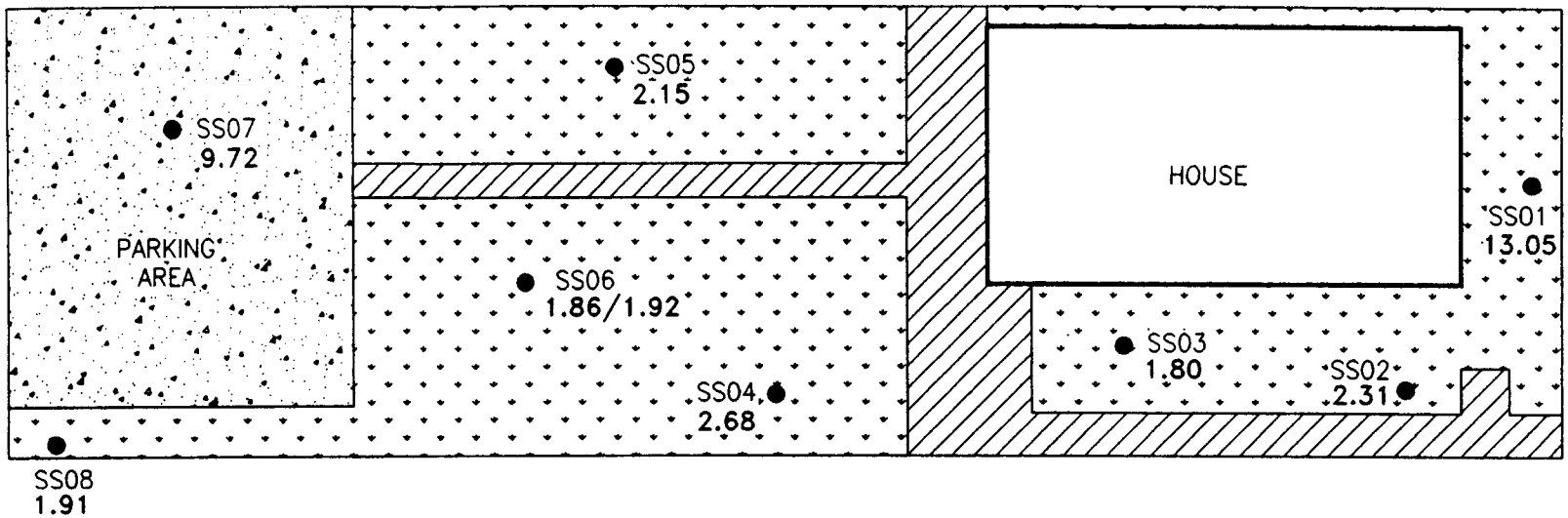

LEGEND

- SIDEWALK
- CONCRETE
- GRASS
- ● SOIL SAMPLE LOCATION
- 1.91 Benzo(a)pyrene Equivalents Concentration in mg/kg

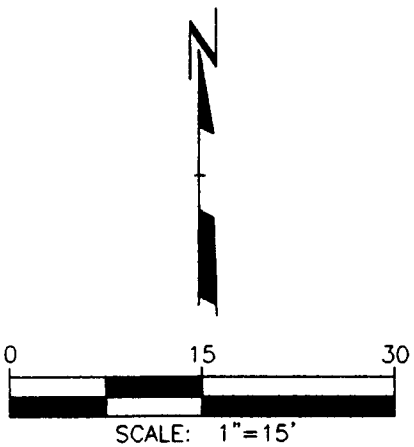

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FIGURE 2.3

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2834 S. SPAULDING

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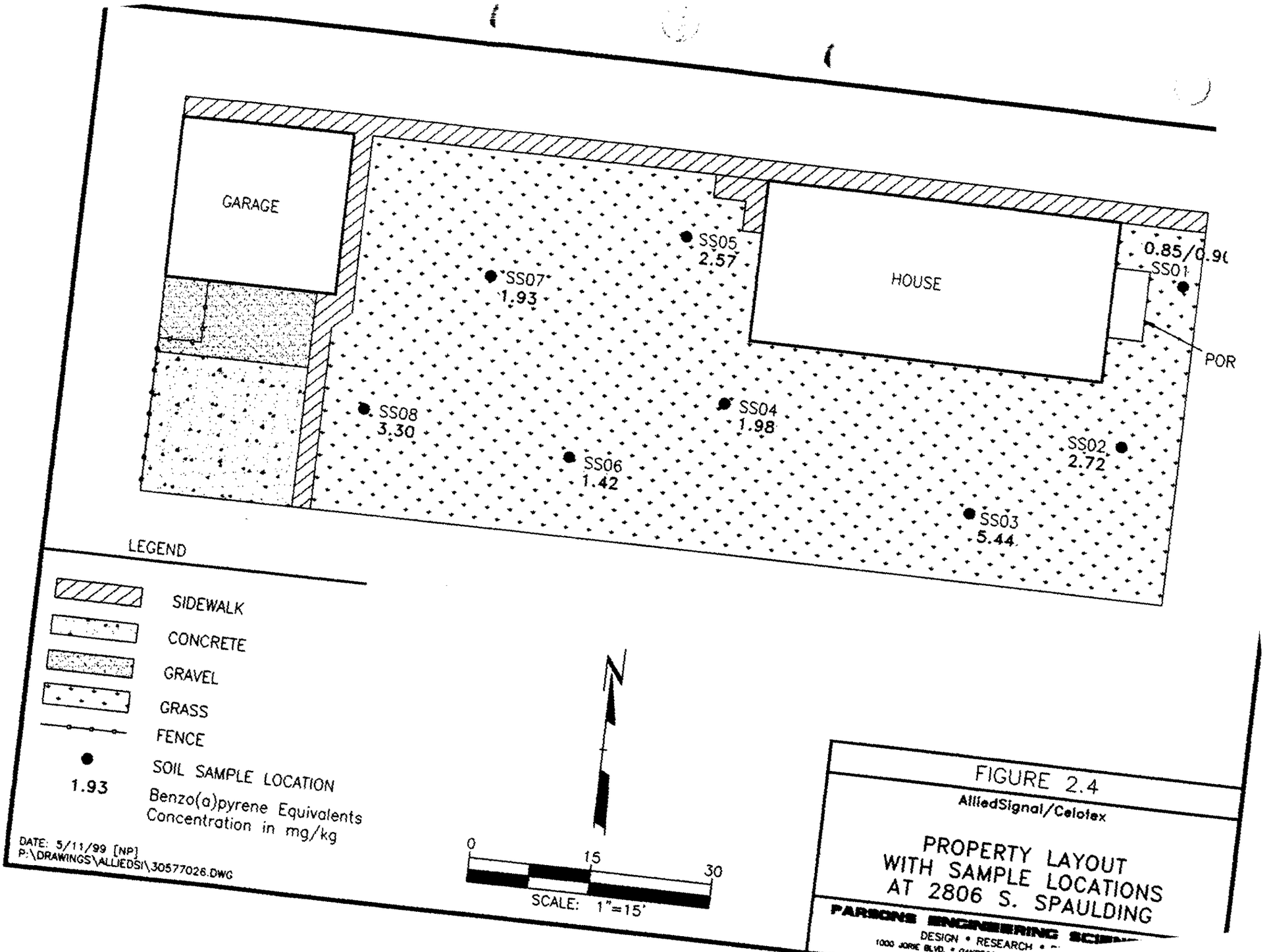

FIGURE 2.4

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2806 S. SPAULDING

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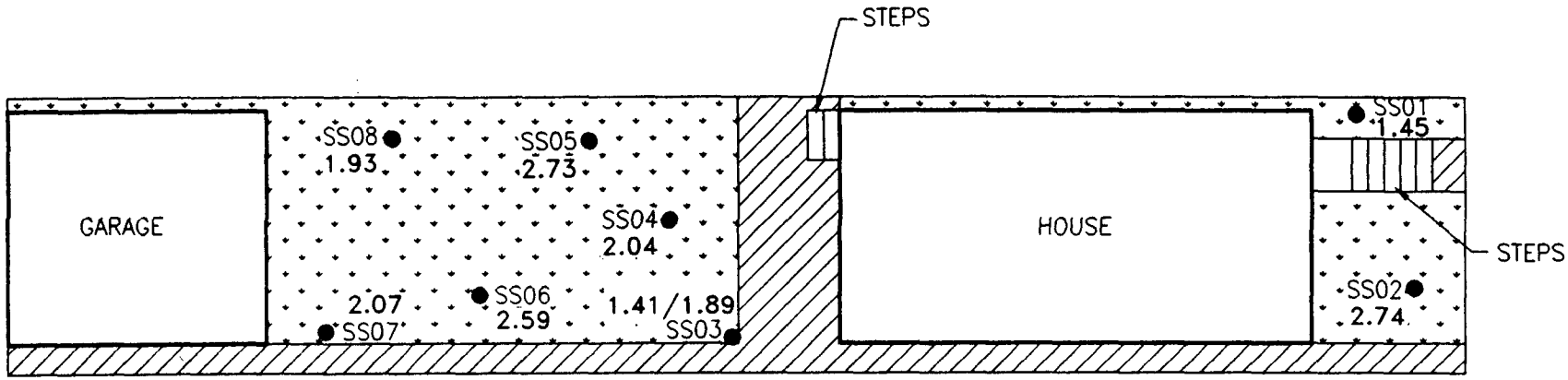

LEGEND

- SIDEWALK
- GRASS
- ● SOIL SAMPLE LOCATION
- 2.73 Benzo(a)pyrene Equivalents Concentration in mg/kg

N

0 15 30

SCALE: 1"=15'

DATE: 5/11/99 [NP]
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FIGURE 2.5

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2750 S. SPAULDING

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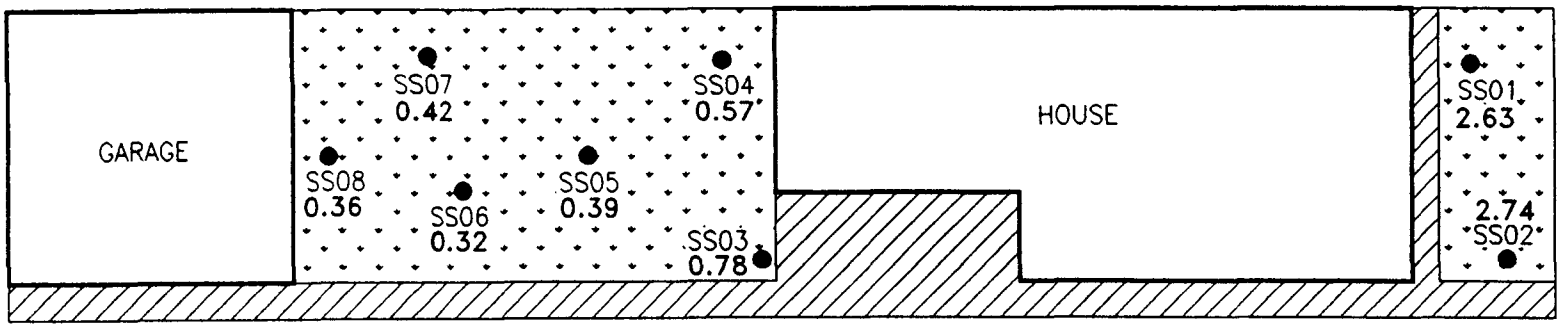

LEGEND

- SIDEWALK
- GRASS
- ● SOIL SAMPLE LOCATION
- 0.39 Benzo(a)pyrene Equivalents Concentration in mg/kg

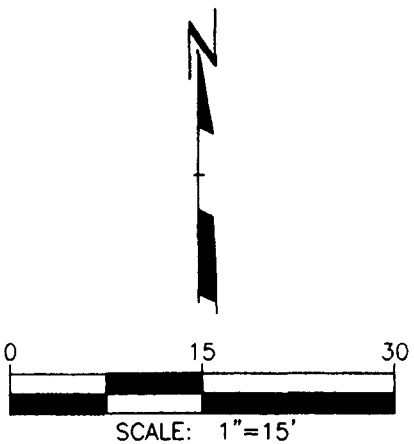

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FIGURE 2.6

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2726 S. SPAULDING

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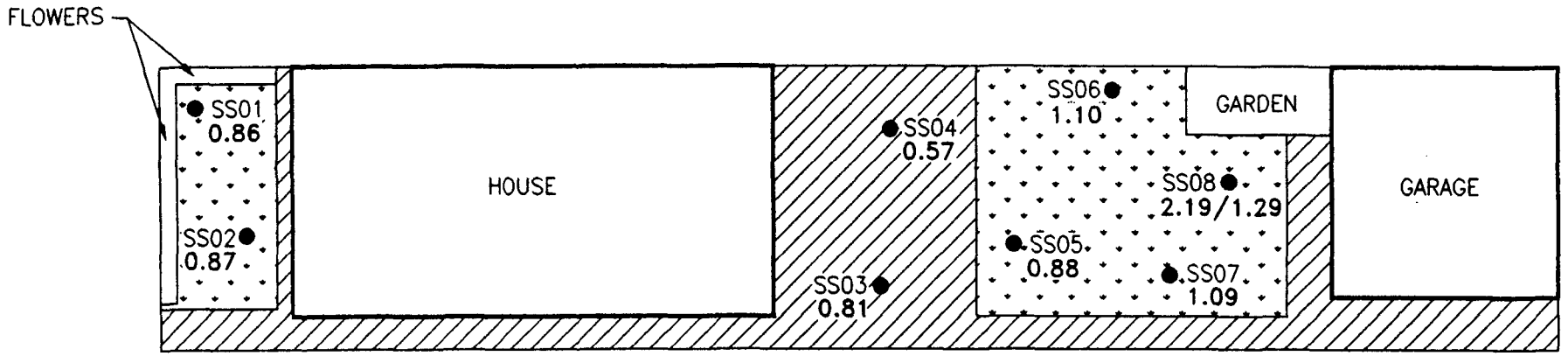

LEGEND

- SIDEWALK
- GRASS
- ● SOIL SAMPLE LOCATION
- 0.86 Benzo(a)pyrene Equivalents Concentration in mg/kg

N

0 15 30

SCALE: 1"=15'

DATE: 5/11/99 [NP]
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FIGURE 2.7

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2655 S. CHRISTIANA

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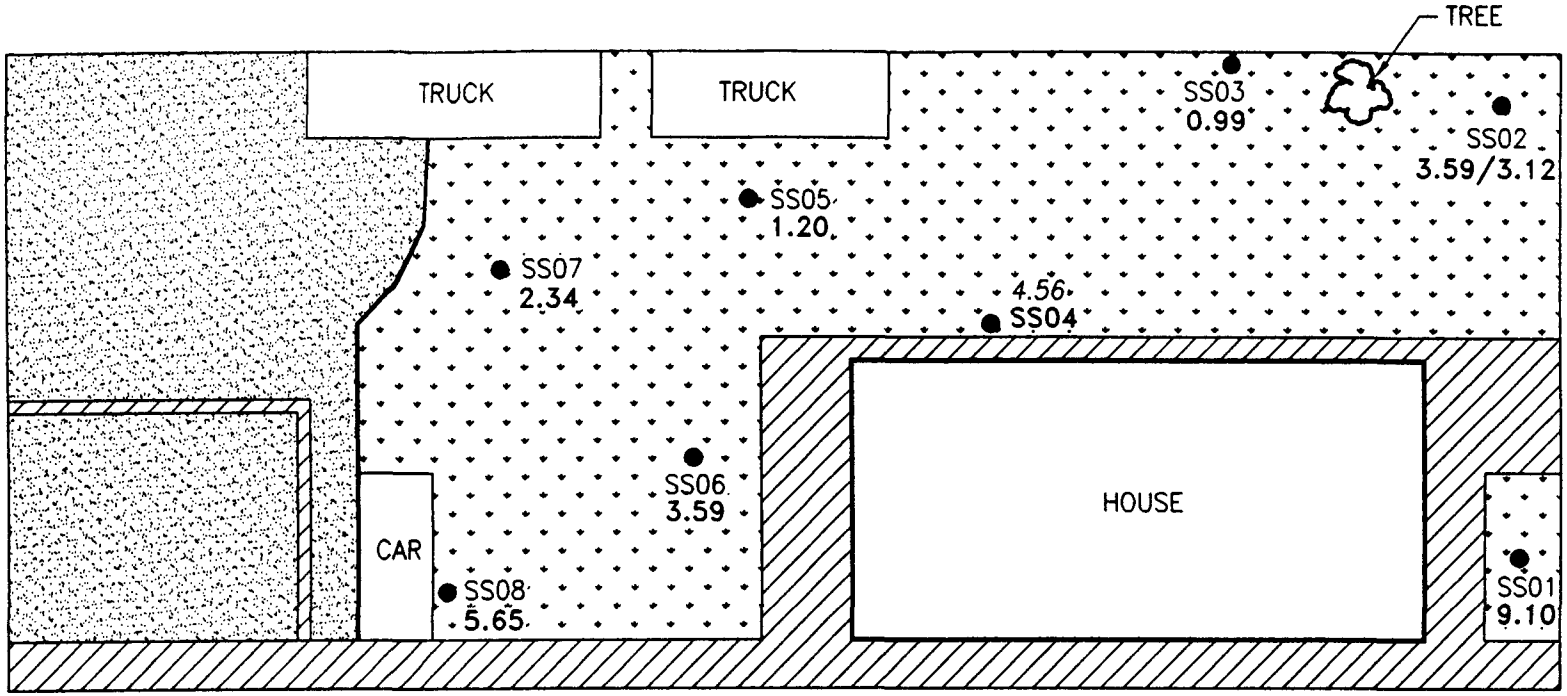

LEGEND

- SIDEWALK
- GRAVEL
- GRASS
- ● SOIL SAMPLE LOCATION
- 3.59 Benzo(a)pyrene Equivalents Concentration in mg/kg

N

0 15 30

SCALE: 1"=15'

DATE: 2/20/99 [NP]
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FIGURE 2.8

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2638 S. SACRAMENTO

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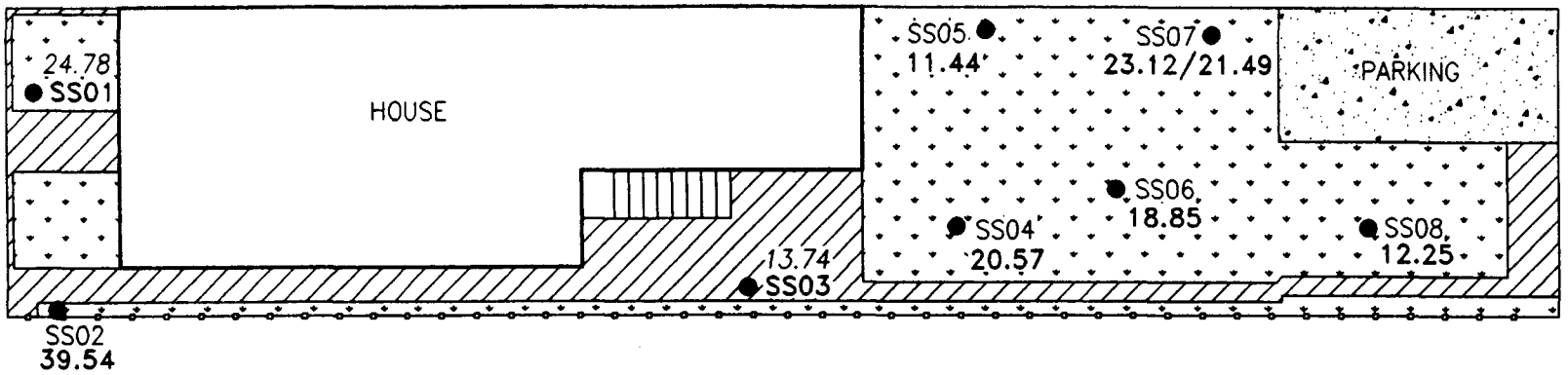

LEGEND

- SIDEWALK
- CONCRETE
- GRASS
- FENCE
- SOIL SAMPLE LOCATION
- **39.54** Benzo(a)pyrene Equivalents Concentration in mg/kg

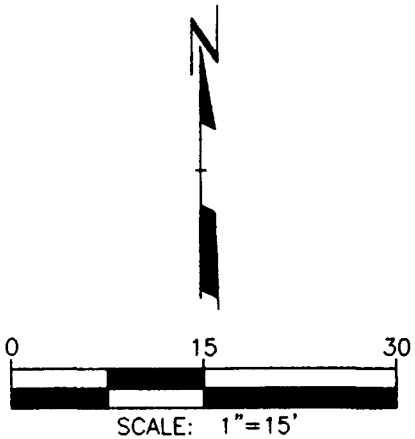

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FIGURE 2.9

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2727 S. WHIPPLE

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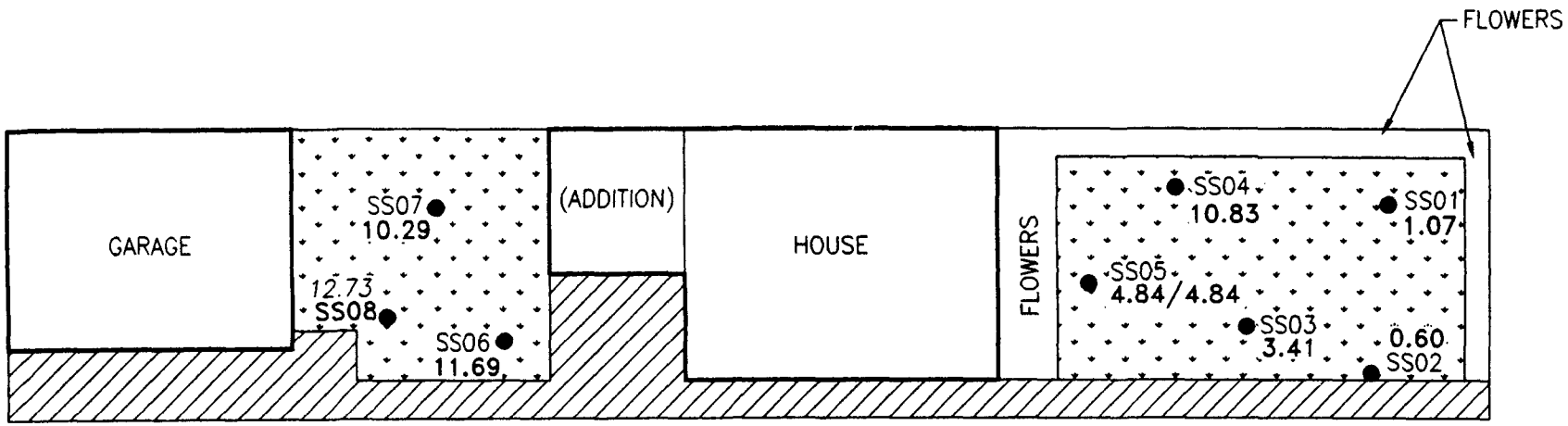

LEGEND

- SIDEWALK
- GRASS
- ● SOIL SAMPLE LOCATION
- 10.29 Benzo(a)pyrene Equivalents Concentration in mg/kg

N

0 15 30

SCALE: 1"=15'

DATE: 5/11/99 [NP]
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FIGURE 2.10

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2744 S. SACRAMENTO

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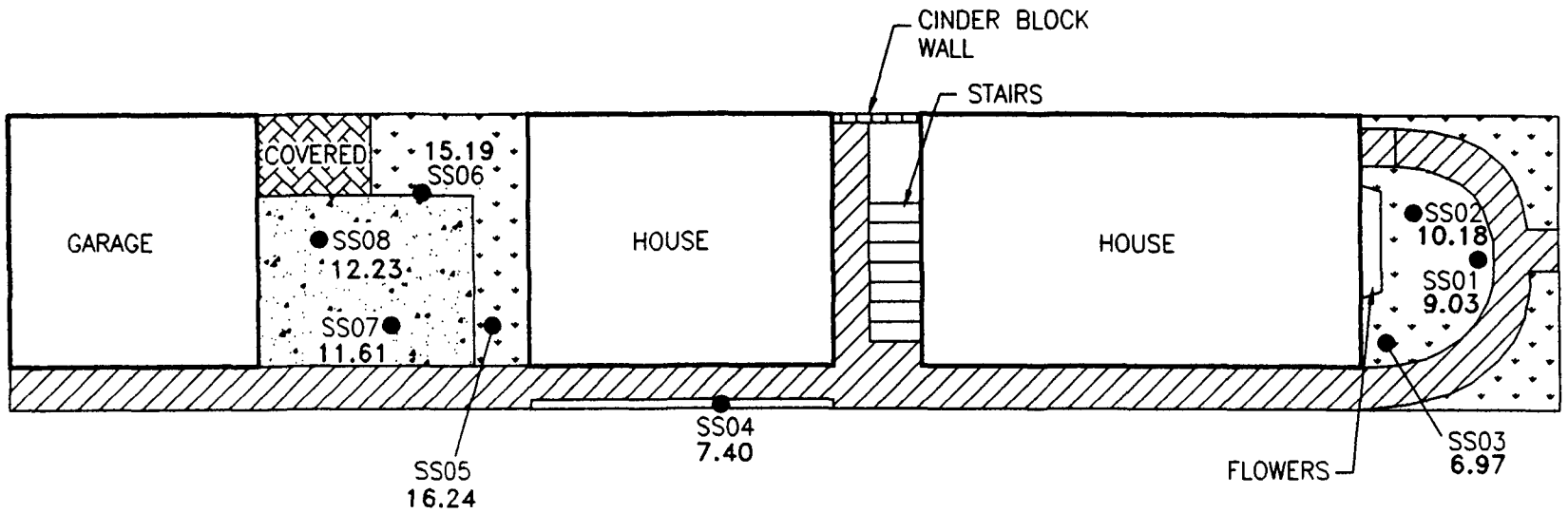

LEGEND

- SIDEWALK
- CONCRETE
- GRASS
- ● SOIL SAMPLE LOCATION
- 11.61 Benzo(a)pyrene Equivalents Concentration in mg/kg

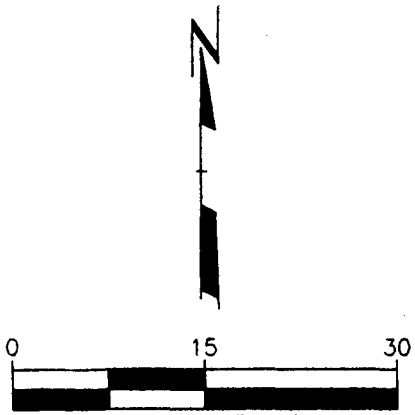

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FIGURE 2.11

AlliedSignal/Celotex

PROPERTY LAYOUT
WITH SAMPLE LOCATIONS
AT 2736 S. SACRAMENTO

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SECTION 3
DATA RESULTS AND VALIDATION FINDINGS

3.1 SAMPLE DATA RESULTS

As discussed in Section 2, 80 investigative soil samples and 8 field duplicate soil samples were collected and analyzed as part of the Phase III RASAP. All soil samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). Per the project Quality Assurance Project Plan (QAPP), analyses were performed using the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analysis (CLP SOW OLM3.1) for low/medium semivolatile organic compounds (SVOCS), of which PAHs are a subset. Table 3.1 presents a summary of the PAH compounds detected in each soil sample and the associated concentrations. Table 3.2 presents a summary of the B(a)P equivalent concentration for each sample.

3.2 DATA VALIDATION

Quanterra prepared and submitted the data from the Phase III RASAP in five sample delivery groups (SDGs): L21159, L21162, L22107, L23102 and L23155. Each of the SDGs was subjected to the Level 3 validation process. A quality assurance summary report has been prepared for each SDG to present the findings of the Level 3 validation processes for each SDG. These reports are presented below. A selected subset of the sample data was subjected to Level 4 data validation. Refer to Section 3.2.2 for the Level 4 data validation report data and for discussions on the overall accuracy, precision, and completeness of the data set.

3.2.1 Level 3 Data Validation Report by Sample Delivery Group

3.2.1.1 Validation Report for Sample Delivery Group L21159

Sample delivery group L21159 contained the analytical data for 20 soil samples collected and analyzed for PAHs. The samples collected included one field duplicate: SSAS3-RAP1-SS93-0/3 is a duplicate of sample SSAS3-RAP1-SS03-0/3. One sample

was collected as an MS/MSD sample: SSAS3-RAP1-SS03-0/3. No field or equipment blanks were collected with the samples in this SDG. No reported PAH results have been qualified as unusable (rejected) for this SDG.

Quality assurance/quality control issues leading to qualification of results include: MS/MSD accuracy or precision outliers ('J5'/'UJ5') and results above the method detection limit (MDL) but below the project reporting limit (PRL). Outliers indicate that the reported or calculated result for the QC sample is outside the specified control limits described in the SOW and the QAPP. Details regarding the samples and analytes affected by these issues are presented below.

3.2.1.1.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. No reported PAH results have been qualified as unusable (rejected) for this SDG. Other QA/QC issues leading to qualification of reported PAH results include: MS/MSD outliers and reported results above the MDL but less than the PRL. Details regarding the samples and analytes affected by these issues are presented in the sections below.

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Some of these detections have been qualified as estimated and flagged 'J1'.

3.2.1.1.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.1.1.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.1.1.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.1.1.5 Field and Laboratory Blanks

All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.1.1.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates, as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.1.7 Matrix Spike/Matrix Spike Duplicate Compounds

Accuracy (percent recovery) outliers were reported for the MS/MSD (SSAS3-RAP1-SS06-0/3) for the PAH pyrene. Reported results for pyrene in the associated samples have been qualified as estimated and flagged 'J5'.

3.2.1.1.8 Laboratory Control Samples)

All laboratory control samples (LCSs) prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.1.1.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.1.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Some of these detections have been qualified as estimated and flagged 'J1'. All detections and quantitation of the analytes were made following the criteria specified in the SOW.

3.2.1.2 Validation Report for Sample Delivery Group L21162

Sample delivery group L21162 contained the analytical data for 20 soil samples collected and analyzed for PAHs. The samples collected included one field duplicate: sample SSAS3-RAP4-SS93-0/3 is a duplicate of sample SSAS3-RAP4-SS03-0/3. One sample was collected as an MS/MSD: SSAS3-RAP4-SS07-0/3. No field blank or equipment blank samples were collected with the samples in this SDG. No reported results for samples in this SDG have been qualified as unusable.

Other QA/QC problems leading to the qualification of results include: reported results above the MDL but less than the PRL, field duplicate precision outliers and a combination of one or more of these problems.

3.2.1.2.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. No reported PAH results have

been qualified as unusable (rejected) for this SDG. Other QA/QC issues leading to qualification of data include: reported results above the MDL but less than the PRL, field precision outliers, and a combination of one or more of these issues. Details regarding these issues are presented below.

Target PAHs detected in one or more of the samples in this SDG include: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene and naphthalene. Some of these detections have been qualified as estimated and flagged 'J1'.

A field precision outlier (relative percent difference) was calculated for target analyte fluoranthene between the reported results for the sample and duplicate of sample SSAS3-RAP4-SS03-0/3. The calculated relative percent difference exceeded the control limit. Reported results for this analyte in the sample (SSAS3-RAP4-SS93-0/3) and duplicate (SSAS3-RAP4-SS03-0/3) have been qualified as estimated ('UJ7/J7').

3.2.1.2.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.1.2.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.1.2.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.1.2.5 Field and Laboratory Blanks

No equipment or field blanks were collected in this SDG. All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.1.2.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.2.7 Matrix Spike/Matrix Spike Duplicate Compounds

Sample SSAS3-RAP4-SS07-0/3 was collected as the MS/MSD sample associated with this SDG. No accuracy (percent recovery) or precision (relative percent difference) outliers were reported for the MS/MSD for PAH analysis.

3.2.1.2.8 Laboratory Control Samples

All LCSs prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.1.2.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.2.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene, dibenz(a,h)anthracene,

benzo(b)fluoranthene, benzo(k)fluoranthene and indeno(1,2,3-cd)pyrene. Some of these detections have been qualified as estimated and flagged 'J1'. All detections and quantitation of the analytes were made following the criteria specified in the SOW.

3.2.1.3 Validation Report for Sample Delivery Group L22107

Sample delivery group L22107 contained the analytical data for 20 soil samples collected and analyzed for PAHs. The samples collected included two field duplicates: SSAS3-RAP6-SS98-0/3 is a duplicate of sample SSAS3-RAP6-SS08-0/3 and SSAS3-RAP7-SS92-0/3 is a duplicate of sample SSAS3-RAP7-SS02-0/3. One sample was collected as an MS/MSD sample: SSAS3-RAP7-S01-0/3. No field or equipment blanks were collected with the samples in this SDG. No reported results for this SDG have been qualified as unusable.

Other QA/QC problems leading to qualification of data include: reported results above the MDL but less than the PRL, MS/MSD outliers, field duplicate precision outliers, and a combination of one or more of these problems. Details regarding the samples and analytes affected by these problems are presented below.

3.2.1.3.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. No reported PAH results have been qualified as unusable (rejected) for this SDG. Other QA/QC problems leading to qualification of data include: reported results above the MDL but less than the PRL, MS/MSD outliers, field duplicate outliers, and a combination of one or more of these problems.

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: 2-methylnaphthalene, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene,

indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Some of these detections have been qualified as estimated and flagged 'J1'.

Field duplicate precision outliers were calculated for PAHs fluoranthene and naphthalene for the duplicate of sample SSAS3-RAP6-SS08-0/3. Reported results for these analytes in the sample (SSAS3-RAP6-SS08-0/3) and duplicate (SSAS3-RAP6-SS98-0/3) have been qualified as estimated.

3.2.1.3.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.1.3.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.1.3.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.1.3.5 Field and Laboratory Blanks

No equipment or field blanks were collected in this SDG. All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.1.3.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.3.7 Matrix Spike/Matrix Spike Duplicate Compounds

Sample SSAS3-RAP7-SS01-0/3 was collected as the MS/MSD sample associated with this SDG. An accuracy (percent recovery) outliers was reported for PAH pyrene for the MS/MSD associated with this SDG. The results reported for pyrene in the associated samples have been qualified as estimated ('UJ5/J5').

3.2.1.3.8 Laboratory Control Samples

All LCSs prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.1.3.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.3.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Some of these detections have been qualified as estimated and flagged 'J1'. All detections and quantitation of the analytes were made following the criteria specified in the SOW.

3.2.1.4 Validation Report for Sample Delivery Group L23102

Sample delivery group L23102 contained the analytical data for 20 soil samples collected and analyzed for PAHs. The samples collected included two field duplicates: SSAS3-RAP8-SS97-0/3 is a duplicate of sample SSAS3-RAP8-SS07-0/3 and SSAS3-

RAP9-SS95-0/3 is a duplicate of sample SSAS3-RAP9-SS05-0/3. One sample, SSAS3-RAP7-SS07-0/3, was collected and analyzed as the MS/MSD sample with this SDG. No field or equipment blanks were collected with the samples in this SDG. No reported results for samples in this SDG have been qualified as unusable.

Other QA/QC problems leading to qualification of data include: reported results above the MDL but less than the PRL, field duplicate precision outliers, and a combination of one or more of these problems.

3.2.1.4.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. No reported PAH results have been qualified as unusable (rejected) for this SDG. Some reported detections have been qualified as estimated and flagged 'J1'.

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. Some of these detections are above the MDL but below the PRL and have been qualified as estimated ('J1').

Field duplicate precision outliers were calculated for PAHs naphthalene and fluoranthene for the duplicates of sample SSAS3-RAP8-SS07-0/3. The reported results for these analytes in the sample (SSAS3-RAP8-SS07-0/3) and its duplicate (SSAS3-RAP8-SS97-0/3) have been qualified as estimated ('UJ7/J7').

3.2.1.4.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.1.4.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.1.4.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.1.4.5 Field and Laboratory Blanks

No equipment or equipment blanks were collected in this SDG. All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.1.4.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.4.7 Matrix Spike/Matrix Spike Duplicate Compounds

No MS/MSD accuracy or precision outliers were reported for the MS/MSDs associated with this SDG.

3.2.1.4.8 Laboratory Control Samples (LCS)

All LCSs prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.1.4.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.4.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. Some of these detections are above the MDL but below the PRL and have been qualified as estimated ('J1'). All detections and quantitation of the analytes were made following the criteria specified in the SOW.

3.2.1 5 Validation Report for Sample Delivery Group L23155

Sample delivery group L23155 contained the analytical data for 8 soil samples collected and analyzed for PAHs. No field duplicates were collected for this SDG. Sample SSAS3-RAP10-SS02-0/3 was collected as the MS/MSD associated with this SDGs. No field or equipment blanks were collected with the samples in this SDG. Other QA/QC problems leading to qualification of data included: reported results above the MDL but less than the PRL, MS/MSD outliers, and a combination of one or more of these problems.

3.2.1.5.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. No reported PAH results have been qualified as unusable (rejected) for this SDG. Other QA/QC problems leading to qualification of data included: reported results above the MDL but below the PRL, and MS/MSD outliers.

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: acenaphthene, anthracene, benzo(a)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, chrysene, fluoranthene, fluorene, naphthalene, benzo(a)pyrene, dibenz(a,h)anthracene, benzo(k)fluoranthene, benzo(b)fluoranthene and pyrene. Some detections have been qualified as estimated and flagged 'J1'.

3.2.1.5.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.1.5.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.1.5.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.1.5.5 Field and Laboratory Blanks

No equipment or field blanks were collected in this SDG. All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.1.5.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.5.7 Matrix Spike/Matrix Spike Duplicate Compounds

Matrix spike/matrix spike duplicate percent recovery outliers were reported for target PAHs acenaphthene and pyrene for the MS/MSD (SSAS3-RAP10-SS02-0/3) associated with this SDG. Reported results for these analytes in the associated samples have been qualified as estimated ('J5').

3.2.1.5.8 Laboratory Control Samples

All LCSs prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.1.5.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.1.5.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: acenaphthene, anthracene, benzo(a)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, chrysene, fluoranthene, fluorene, naphthalene, benzo(a)pyrene, dibenz(a,h)anthracene, benzo(k)fluoranthene, benzo(b)fluoranthene and pyrene. Some detections have been qualified as estimated and flagged 'J1'. All detections and quantitation of the analytes were made following the criteria specified in the SOW.

3.2.2 Level 4 Data Validation Report by Sample Delivery Group

3.2.2.1 Overview of Approach

In addition to the Level 3 data validation (which was based on the electronic data deliverables [EDDs] submitted by the laboratory), approximately 55% of the raw data have been subjected to Level 4 validation. The decision to perform the Level 4

validation was based on an independent quality control of the Level 3 validation as well as an attempt to verify that no major problems had been overlooked during the Level 3 validation.

The selection of the data to be subjected to Level 4 validation was based on the information from the Level 3 validation. An attempt was made to select those samples and analyses that exhibited the most QA/QC problems during the Level 3 validation process. Based on this approach, three complete SDGs were selected — L22107, L23102 and L23155.

The Level 4 validation included a comprehensive review and validation of all QC items addressed in the Level 3 validation as well as a comprehensive review and validation of the raw data generated in support of the results. Items reviewed and validated in Level 4 but not in Level 3, included the following: chromatograms and instrument printouts, quantitation reports and bench sheets showing calculated results, and mass spectral data for the GC/MS analyses (PAHs only). One additional difference between the Level 3 and 4 validation processes was the recalculation of representative results for standards, QC samples, and field samples for the method.

The quality assurance summary report presented below for each SDG summarizes the findings of the Level 4 data validation process for that SDG. QA/QC results outside the specified quality control limits, outliers, etc., have resulted in qualification of the data for samples associated with the QC sample. The association and the type of qualifier applied have been based on the USEPA Functional Guidelines for Organic Data Review (February, 1994) and on the project QAPP. Only those parameters subjected to the Level IV validation are discussed in each SDG.

3.2.2.2 Level 4 Validation Report for SDG L22107

All 20 soil samples for PAH analyses for L22107 have been subjected to the Level 4 validation process. The following is a summary of the QA/QC issues examined during the Level 4 validation. There is obviously some repetition of information

between the Level 3 and 4 validation, while greater details are presented for other items.

Generally, there was excellent agreement between the Level III results and the Level IV supporting documentation and raw data. No additional qualification of data was necessary following the Level IV validation of the data for this SDG.

Although no data for this SDG have been changed the results have been validated to ensure that there are no false negatives for PAHs. The QA/QC problems for MS/MSDs and field precision outliers found during the Level III validation were confirmed.

3.2.2.2.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. As indicated above no additional qualification of data was necessary based on the Level IV validation.

3.2.2.2.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.2.2.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.2.2.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.2.2.5 Field and Laboratory Blanks

All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.2.2.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.2.2.7 Matrix Spike/Matrix Spike Duplicate Compounds

Accuracy (percent recovery) outliers were reported for the MS/MSD for PAH analysis for the PAH pyrene. Reported results for pyrene in the associated samples have been qualified as estimated and flagged 'UJ5/J5'.

3.2.2.2.8 Laboratory Control Samples)

All LCSs prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.2.2.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.2.2.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: 2-methylnaphthalene, acenapthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene,

phenanthrene, and pyrene. Some of these detections were above the MDL but below the PRL, and have been qualified as estimates ('J1'). All detections and quantitations of the analytes were made following the criteria specified in the SOW.

3.2.2.3 Level 4 Validation Report for SDG L23102

All 20 soil sample for analyses for PAHs have been subjected to the Level 4 validation process. The following is a summary of the QA/QC issues addressed during the Level 4 validation.

Based on the Level 4 validation, no additional qualification of data was necessary. The QA/QC problems found during the Level 3 validation were confirmed.

All of the samples from the RAP8 property required dilution due to the high level of target PAHs in the samples. Generally, the highest concentrations were reported for the following PAHs: fluoranthene, pyrene, benzo(b)fluoranthene and benzo(a)pyrene.

3.2.2.3.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. As indicated above, no additional qualification of data was necessary based on the Level IV validation.

3.2.2.3.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.2.3.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.2.3.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.2.3.5 Field and Laboratory Blanks

No equipment or trip blanks were collected in this SDG. All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.2.3.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.2.3.7 Matrix Spike/Matrix Spike Duplicate Compounds

Sample SSAS3-RAP7-SS07-0/3 was collected as the MS/MSD sample associated with this SDG. No accuracy (percent recovery) or precision (relative percent difference) outliers were reported for the MS/MSD for PAH analysis.

3.2.2.3.8 Laboratory Control Samples

All LCSs prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.2.3.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.2.3.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Some of these detections are above the MDL but below the PRL and have been qualified as estimates ('J'). All detections and quantitation of the analytes were made following the criteria specified in the SOW.

3.2.2.4 Level 4 Validation Report for SDG L23155

All 8 soil samples for PAH analyses for L23155 have been subjected to the Level 4 validation process. The following is a summary of the QA/QC issues examined during the Level 4 validation. There is obviously some repetition of information between the Level 3 and 4 validation while greater details are presented for other items.

Generally, there was excellent agreement between the Level 3 results and the Level 4 supporting documentation and raw data. No additional qualification of data was necessary following the Level 4 validation of the data for this SDG. Although no data for this SDG have been changed the results have been validated to ensure that there are no false negatives for PAHs. The QA/QC problems for MS/MSDs and field precision outliers found during the Level 3 validation were confirmed.

All eight soil samples in the SDG required dilution due to high levels of target PAHs in the samples. Generally, the PAHs with the highest concentrations were: anthracene, fluoranthene, benzo(b)fluoranthene, and benzo(k)fluoranthene.

3.2.2.4.1 Overall Assessment

Except as indicated below, all samples were prepared and analyzed following the procedures specified for PAH analysis in the SOW. As indicated above no additional qualification of data was necessary based on the Level 4 validation.

3.2.2.4.2 Holding Time

All PAH analyses were performed within the holding time specified in the CLP SOW.

3.2.2.4.3 GC/MS Instrument Performance Check (Tuning)

Gas chromatography and mass spectrometry instrument performance checks (tuning) were performed as required by the CLP SOW. All tunes were in compliance with the tuning criteria specified by the SOW.

3.2.2.4.4 Calibration

All initial and continuing calibration checks were performed as required by the CLP SOW. All calibration checks were in compliance with the initial and continuing calibration criteria specified in the SOW.

3.2.2.4.5 Field and Laboratory Blanks

All laboratory blanks for PAH analyses were prepared and analyzed as required by the QAPP and the SOW. All blanks were free of PAH contamination.

3.2.2.4.6 Surrogate Spikes

All samples, blanks, standards, and QC samples were spiked with surrogates as specified in the SOW. All results reported for surrogates are in compliance with the criteria specified in the QAPP and the SOW.

3.2.2.4.7 Matrix Spike/Matrix Spike Duplicate Compounds

Accuracy (percent recovery) outliers were reported for the MS/MSD for PAH analysis for the PAHs acenaphthene and pyrene. Reported results for acenaphthene and pyrene in the associated samples have been qualified as estimated and flagged 'J5'.

3.2.2.4.8 Laboratory Control Samples

All LCSs prepared and analyzed in support of the PAH analyses for samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW. No accuracy outliers were reported for the PAH LCSs.

3.2.2.4.9 Internal Standards

All results reported for the internal standards for each of the samples in this SDG are in compliance with the criteria specified in the QAPP and the SOW.

3.2.2.4.10 Target Compound Identification

The following target PAHs were detected above the method detection limit in one or more of the samples in this SDG: acenapthene, anthracene, benzo(a)anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene, naphthalene, benzo(b)fluoranthene, and pyrene. Some of these detections were above the MDL but below the PRL, and have been qualified as estimates ('J1'). All detections and quantitations of the analytes were made following the criteria specified in the SOW.

3.2.3 Summary Discussion on the Overall Quality of the Data

3.2.3.1 General

Generally, the samples were prepared and analyzed following the analytical and QA/QC procedures specified in the CLP SOW and the QAPP. A number of samples required dilution due to high levels of target PAHs.

Dilutions due to high levels of target or non-target analytes or matrix interferences in the samples are consistent with the analytical protocols as long as the dilutions follow the guidelines specified by the method. As a result, no data have been qualified due to these dilutions.

Some reported results have been qualified due to problems outside the laboratory's control. Problems in this category include: MS/MSD outliers, results above the MDL but below the PRL, and field duplicate precision outliers.

3.2.3.2 Data Accuracy

Accuracy of the laboratory results has been assessed for compliance against the QA objectives specified in the CLP SOW and in Section 4 of the project QAPP, using the analytical results of laboratory/method blanks, MS/MSD samples surrogate spikes, LCS, and field blanks. There were no significant accuracy problems associated with the PAH analyses except for the MS/MSD outliers for SDGs L21159, L22107, and L23155. Some reported results for target PAHs acenaphthene and pyrene have been qualified as estimated due to MS/MSD accuracy (percent recovery) outliers attributed to matrix interferences in the samples.

3.2.3.3 Data Precision

Precision of the laboratory results has been assessed by comparing the analytical results between MS/MSDs, and laboratory duplicates against the QA objectives specified in the SOW and the QAPP. There were no precision problems leading to the qualification of data as unusable. Some reported results have been qualified as estimated due to precision outliers.

3.2.3.4 Data Completeness

The completeness of laboratory results has been assessed using the equation in Section 13 of the QAPP, by comparing the number of valid (usable) sample results against the total number of planned measurements. Since no reported results have been

qualified as unusable (rejected), the overall completeness for this sampling event relative to all five SDGs is 100%, compared to the QA objective of 90 to 95 percent specified in the QAPP for this project. Every sample that was collected was analyzed by the laboratory.

TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP1-SS01-0/3	SSAS3-RAP1-SS02-0/3	SSAS3-RAP1-SS03-0/3	SSAS3-RAP1-SS04-0/3
Location:		Residential Property 1	Residential Property 1	Residential Property 1	Residential Property 1
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L210159001	A8L210159002	A8L210159004	A8L210159005
EPA Sample ID:		CPH62	CPH68	CPH6F	CPH6G
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/16/98	12/16/98	12/16/98	12/16/98
PAHs	Units				
Anthracene	ug/kg	360 J1	350 J1	340 J1	200 J1
Pyrene	ug/kg	2900 J5	3900 J5	3500 J5	2600 J5
Benzo(g,h,i)perylene	ug/kg	1100	860	1200	760
Indeno(1,2,3-cd)pyrene	ug/kg	1300	950	1200	750
Benzo(b)fluoranthene	ug/kg	3200	3500	3400	2400
Fluoranthene	ug/kg	3700	4200	4000	2400
Benzo(k)fluoranthene	ug/kg	1000	900	1000	540
Acenaphthylene	ug/kg	900 U	850 U	920 U	460 U
Chrysene	ug/kg	2100	2400	2500	1600
Benzo(a)pyrene	ug/kg	2400	2200	2400	1500
Dibenz(a,h)anthracene	ug/kg	260 J1	270 J1	370 J1	230 J1
Benzo(a)Anthracene	ug/kg	2000	2500	2200	1600
Acenaphthene	ug/kg	240 J1	200 J1	240 J1	150 J1
Phenanthrene	ug/kg	2100	2400	2000	1200
Fluorene	ug/kg	160 J1	120 J1	140 J1	77 J1
Naphthalene	ug/kg	130 J1	98 J1	120 J1	58 J1
2-Methylnaphthalene	ug/kg	900 U	850 U	920 U	460 U

J1: Estimated value - Less than reporting limit.
J5: Estimated value - MS/MSD outlier.
J7: Estimated value - Field precision outlier.
J10: Estimated value - Multiple outliers.
U, UJ7: Not Detected.

TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP1-SS05-0/3	SSAS3-RAP1-SS06-0/3-MMSD	SSAS3-RAP1-SS07-0/3	SSAS3-RAP1-SS08-0/3
Location:		Residential Property 1	Residential Property 1	Residential Property 1	Residential Property 1
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	MS/MSD	Field Sample	Field Sample
Lab Sample ID:		A8L210159006	A8L210159007	A8L210159009	A8L210159008
EPA Sample ID:		CPH6J	CPH6K	CPH6N	CPH6L
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/16/98	12/16/98	12/16/98	12/16/98
PAHs	Units				
Anthracene	ug/kg	200 J1	280 J1	180 J1	1200 J1
Pyrene	ug/kg	3100 J5	3600 J5	3100 J5	9700 J5
Benzo(g,h,i)perylene	ug/kg	860	900	780	1600 J1
Indeno(1,2,3-cd)pyrene	ug/kg	920	1000	830	1700 J1
Benzo(b)fluoranthene	ug/kg	2800	2800	2400	5400
Fluoranthene	ug/kg	3100	3600	2800	10000
Benzo(k)fluoranthene	ug/kg	770	810	630	2100
Acenaphthylene	ug/kg	530 U	450 U	440 U	1800 U
Chrysene	ug/kg	1800	2100	1400	4600
Benzo(a)pyrene	ug/kg	1700	1500	1400	3800
Dibenz(a,h)anthracene	ug/kg	230 J1	210 J1	190 J1	440 J1
Benzo(a)Anthracene	ug/kg	1800	2200	1500	4800
Acenaphthene	ug/kg	200 J1	220 J1	110 J1	390 J1
Phenanthrene	ug/kg	1400	2000	1200	6100
Fluorene	ug/kg	100 J1	130 J1	63 J1	420 J1
Naphthalene	ug/kg	91 J1	250 J1	58 J1	410 J1
2-Methylnaphthalene	ug/kg	530 U	200 J1	440 U	1800 U

J1: Estimated value - Less than reporting limit.
J5: Estimated value - MS/MSD outlier.
J7: Estimated value - Field precision outlier.
J10: Estimated value - Multiple outliers.
U, UJ7: Not Detected.

TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP1-SS93-0/3	SSAS3-RAP2-SS01-0/3	SSAS3-RAP2-SS02-0/3	SSAS3-RAP2-SS03-0/3
Location:		Residential Property 2	Residential Property 2	Residential Property 2	Residential Property 2
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Duplicate	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L210159003	A8L210159011	A8L210159012	A8L210159013
EPA Sample ID:		CPH6E	CPH6R	CPH6T	CPH6V
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/16/98	12/16/98	12/16/98	12/16/98
PAHs	Units				
Anthracene	ug/kg	290 J1	2000 J1	190 J1	170 J1
Pyrene	ug/kg	3000 J5	26000 J5	2400 J5	2800 J5
Benzo(g,h,i)perylene	ug/kg	900 J1	3200 J1	720	600
Indeno(1,2,3-cd)pyrene	ug/kg	1000	2800 J1	690	540
Benzo(b)fluoranthene	ug/kg	3100	14000	2700	2300
Fluoranthene	ug/kg	3800	23000	2800	2100
Benzo(k)fluoranthene	ug/kg	990	5400	610	520
Acenaphthylene	ug/kg	920 U	750 J1	600 U	420 U
Chrysene	ug/kg	2100	11000	1700	1500
Benzo(a)pyrene	ug/kg	2000	9100	1600	1200
Dibenz(a,h)anthracene	ug/kg	280 J1	1100 J1	180 J1	160 J1
Benzo(a)Anthracene	ug/kg	2000	11000	1800	1500
Acenaphthene	ug/kg	220 J1	740 J1	170 J1	130 J1
Phenanthrene	ug/kg	1800	15000	1400	1100
Fluorene	ug/kg	120 J1	1200 J1	93 J1	74 J1
Naphthalene	ug/kg	100 J1	1400 J1	77 J1	86 J1
2-Methylnaphthalene	ug/kg	920 U	5300 U	600 U	45 J1

J1: Estimated value - Less than reporting limit.
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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP2-SS04-0/3	SSAS3-RAP2-SS05-0/3	SSAS3-RAP2-SS06-0/3	SSAS3-RAP2-SS07-0/3
Location:		Residential Property 2	Residential Property 2	Residential Property 2	Residential Property 2
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L210159015	A8L210159014	A8L210159018	A8L210159016
EPA Sample ID:		CPH70	CPH6X	CPH77	CPH71
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/16/98	12/16/98	12/16/98	12/16/98
PAHs	Units				
Anthracene	ug/kg	260 J1	210 J1	140 J1	970 J1
Pyrene	ug/kg	3300 J5	3100 J5	2100 J5	11000 J5
Benzo(g,h,i)perylene	ug/kg	980	780	630	4700
Indeno(1,2,3-cd)pyrene	ug/kg	790	790	580	3900
Benzo(b)fluoranthene	ug/kg	3000	2400	2100	10000
Fluoranthene	ug/kg	3200	2900	2000	11000
Benzo(k)fluoranthene	ug/kg	780	620	550	2800
Acenaphthylene	ug/kg	580 U	460 U	460 U	240 J1
Chrysene	ug/kg	2000	1500	1200	6000
Benzo(a)pyrene	ug/kg	1900	1500	1300	6600
Dibenz(a,h)anthracene	ug/kg	200 J1	170 J1	170 J1	1100 J1
Benzo(a)Anthracene	ug/kg	1900	1500	1200	6000
Acenaphthene	ug/kg	210 J1	120 J1	140 J1	560 J1
Phenanthrene	ug/kg	1900	1200	950	4900
Fluorene	ug/kg	180 J1	90 J1	70 J1	350 J1
Naphthalene	ug/kg	170 J1	60 J1	62 J1	320 J1
2-Methylnaphthalene	ug/kg	77 J1	460 U	460 U	260 J1

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP2-SS08-0/3	SSAS3-RAP2-SS96-0/3	SSAS3-RAP3-SS01-0/3	SSAS3-RAP3-SS02-0/3
Location:		Residential Property 2	Residential Property 2	Residential Property 3	Residential Property 3
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Duplicate	Field Sample	Field Sample
Lab Sample ID:		A8L210159017	A8L210159010	A8L210159019	A8L210162001
EPA Sample ID:		CPH75	CPH6Q	CPH79	CPH7X
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/16/98	12/16/98	12/16/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	2200 U	160 J1	90 J1	190 J1
Pyrene	ug/kg	2300 J5	2400 J5	1100	2700
Benzo(g,h,i)perylene	ug/kg	980 J1	540	330 J1	970
Indeno(1,2,3-cd)pyrene	ug/kg	730 J1	730	290 J1	820
Benzo(b)fluoranthene	ug/kg	1900 J1	2100	930	3000
Fluoranthene	ug/kg	1800 J1	2100	1100	2600
Benzo(k)fluoranthene	ug/kg	440 J1	600	300 J1	910
Acenaphthylene	ug/kg	2200 U	460 U	420 U	600 U
Chrysene	ug/kg	1300 J1	1200	690	1800
Benzo(a)pyrene	ug/kg	1300 J1	1300	600	1900
Dibenz(a,h)anthracene	ug/kg	230 J1	210 J1	63 J1	260 J1
Benzo(a)Anthracene	ug/kg	1100 J1	1200	620	1700
Acenaphthene	ug/kg	2200 U	110 J1	54 J1	160 J1
Phenanthrene	ug/kg	840 J1	880	490	1200
Fluorene	ug/kg	2200 U	60 J1	420 U	71 J1
Naphthalene	ug/kg	2200 U	62 J1	420 U	71 J1
2-Methylnaphthalene	ug/kg	2200 U	460 U	420 U	600 U

J1: Estimated value - Less than reporting limit.
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J7: Estimated value - Field precision outlier.
J10: Estimated value - Multiple outliers.
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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP3-SS03-0/3	SSAS3-RAP3-SS04-0/3	SSAS3-RAP3-SS05-0/3	SSAS3-RAP3-SS06-0/3
Location:		Residential Property 3	Residential Property 3	Residential Property 3	Residential Property 3
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L210162002	A8L210162003	A8L210162004	A8L210162005
EPA Sample ID:		CPH86	CPH87	CPH89	CPH8A
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	650 J1	170 J1	210 J1	130 J1
Pyrene	ug/kg	8200	2600	3200	2200
Benzo(g,h,i)perylene	ug/kg	2100	660	880	460
Indeno(1,2,3-cd)pyrene	ug/kg	1800	600	670	390 J1
Benzo(b)fluoranthene	ug/kg	5600	2600	2800	1700
Fluoranthene	ug/kg	6400	2300	2600	1700
Benzo(k)fluoranthene	ug/kg	2400	530	900	400 J1
Acenaphthylene	ug/kg	150 J1	430 U	610 U	440 U
Chrysene	ug/kg	4000	1700	1800	1200
Benzo(a)pyrene	ug/kg	3700	1300	1800	1000
Dibenz(a,h)anthracene	ug/kg	570 J1	190 J1	240 J1	96 J1
Benzo(a)Anthracene	ug/kg	4000	1600	1700	1100
Acenaphthene	ug/kg	280 J1	110 J1	160 J1	94 J1
Phenanthrene	ug/kg	3700	1000	1200	860
Fluorene	ug/kg	310 J1	71 J1	88 J1	58 J1
Naphthalene	ug/kg	140 J1	56 J1	74 J1	54 J1
2-Methylnaphthalene	ug/kg	1200 U	430 U	610 U	440 U

J1: Estimated value - Less than reporting limit.
J5: Estimated value - MS/MSD outlier.
J7: Estimated value - Field precision outlier.
J10: Estimated value - Multiple outliers.
U, UJ7: Not Detected.

TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP3-SS07-0/3	SSAS3-RAP3-SS08-0/3	SSAS3-RAP3-SS91-0/3	SSAS3-RAP4-SS01-0/3
Location:		Residential Property 3	Residential Property 3	Residential Property 3	Residential Property 4
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Duplicate	Field Sample
Lab Sample ID:		A8L210162006	A8L210162007	A8L210159020	A8L210162008
EPA Sample ID:		CPH8C	CPH8D	CPH7C	CPH8E
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/16/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	160 J1	270 J1	89 J1	190 J1
Pyrene	ug/kg	2600	6200	1200	2800
Benzo(g,h,i)perylene	ug/kg	550	880 J1	310 J1	470
Indeno(1,2,3-cd)pyrene	ug/kg	500	910 J1	300 J1	440
Benzo(b)fluoranthene	ug/kg	2100	3600	930	1700
Fluoranthene	ug/kg	1900	4200	980	2100
Benzo(k)fluoranthene	ug/kg	590	1100	350 J1	420
Acenaphthylene	ug/kg	470 U	910 U	410 U	380 U
Chrysene	ug/kg	1300	2700	650	1200
Benzo(a)pyrene	ug/kg	1400	2300	630	980
Dibenz(a,h)anthracene	ug/kg	130 J1	280 J1	91 J1	120 J1
Benzo(a)Anthracene	ug/kg	1300	2600	550	1300
Acenaphthene	ug/kg	100 J1	910 U	54 J1	90 J1
Phenanthrene	ug/kg	800	1900	490	1100
Fluorene	ug/kg	60 J1	110 J1	410 U	68 J1
Naphthalene	ug/kg	470 U	910 U	410 U	44 J1
2-Methylnaphthalene	ug/kg	470 U	910 U	410 U	380 U

J1: Estimated value - Less than reporting limit.
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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP4-SS02-0/3	SSAS3-RAP4-SS03-0/3	SSAS3-RAP4-SS04-0/3	SSAS3-RAP4-SS05-0/3
Location:		Residential Property 4	Residential Property 4	Residential Property 4	Residential Property 4
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L210162009	A8L210162010	A8L210162012	A8L210162013
EPA Sample ID:		CPH8H	CPH8J	CPH8L	CPH8M
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	360 J1	150 J1	270 J1	490 J1
Pyrene	ug/kg	4500	2400	2700	5900
Benzo(g,h,i)perylene	ug/kg	970	560	840	660 J1
Indeno(1,2,3-cd)pyrene	ug/kg	890	540	670	750 J1
Benzo(b)fluoranthene	ug/kg	2500	1900	2600	2600
Fluoranthene	ug/kg	2900	1800	3400	3600
Benzo(k)fluoranthene	ug/kg	980	430 J1	580	910 J1
Acenaphthylene	ug/kg	810 U	480 U	540 U	920 U
Chrysene	ug/kg	1900	1400	1300	2400
Benzo(a)pyrene	ug/kg	2000	940	1400	2000
Dibenz(a,h)anthracene	ug/kg	200 J1	88 J1	130 J1	160 J1
Benzo(a)Anthracene	ug/kg	1900	1300	1800	2200
Acenaphthene	ug/kg	260 J1	100 J1	140 J1	150 J1
Phenanthrene	ug/kg	2300	820	1600	2200
Fluorene	ug/kg	180 J1	60 J1	91 J1	160 J1
Naphthalene	ug/kg	110 J1	51 J1	59 J1	920 U
2-Methylnaphthalene	ug/kg	87 J1	480 U	540 U	920 U

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP4-SS06-0/3	SSAS3-RAP4-SS07-0/3-MMSD	SSAS3-RAP4-SS08-0/3	SSAS3-RAP4-SS93-0/3
Location:		Residential Property 4	Residential Property 4	Residential Property 4	Residential Property 4
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	MS/MSD	Field Sample	Duplicate
Lab Sample ID:		A8L210162014	A8L210162015	A8L210162016	A8L210162011
EPA Sample ID:		CPH8N	CPH8Q	CPH8R	CPH8K
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	330 J1	200 J1	200 J1	180 J1
Pyrene	ug/kg	3600	2900	3300	3000
Benzo(g,h,i)perylene	ug/kg	690	840	730	440 J1
Indeno(1,2,3-cd)pyrene	ug/kg	650 J1	670 J1	490 J1	560
Benzo(b)fluoranthene	ug/kg	2900	2700	2100	1700
Fluoranthene	ug/kg	3600	3100	2700	230 J10
Benzo(k)fluoranthene	ug/kg	640 J1	740	670	900
Acenaphthylene	ug/kg	690 U	690 U	640 U	490 U
Chrysene	ug/kg	1600	1700	1600	1900
Benzo(a)pyrene	ug/kg	1800	1400	1400	1400
Dibenz(a,h)anthracene	ug/kg	220 J1	150 J1	88 J1	110 J1
Benzo(a)Anthracene	ug/kg	2100	1700	1700	1400
Acenaphthene	ug/kg	170 J1	100 J1	100 J1	170 J1
Phenanthrene	ug/kg	1900	1200	1300	1100
Fluorene	ug/kg	130 J1	690 U	66 J1	110 J1
Naphthalene	ug/kg	690 U	690 U	640 U	61 J1
2-Methylnaphthalene	ug/kg	690 U	690 U	640 U	490 U

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP5-SS01-0/3	SSAS3-RAP5-SS02-0/3	SSAS3-RAP5-SS03-0/3	SSAS3-RAP5-SS04-0/3
	Location:	Residential Property 5	Residential Property 5	Residential Property 5	Residential Property 5
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L210162017	A8L210162018	A8L210162019	A8L210162020
	EPA Sample ID:	CPH8V	CPH8W	CPH8X	CPH90
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	420 J1	480 J1	90 J1	420 U
Pyrene	ug/kg	4500	5400	1100	650
Benzo(g,h,i)perylene	ug/kg	980	850	250 J1	200 J1
Indeno(1,2,3-cd)pyrene	ug/kg	910	670 J1	170 J1	140 J1
Benzo(b)fluoranthene	ug/kg	2600	2600	800	570
Fluoranthene	ug/kg	4100	3800	1100	690
Benzo(k)fluoranthene	ug/kg	1100	890	330 J1	160 J1
Acenaphthylene	ug/kg	770 U	850 U	410 U	420 U
Chrysene	ug/kg	1900	2100	630	410 J1
Benzo(a)pyrene	ug/kg	1900	2000	570	410 J1
Dibenz(a,h)anthracene	ug/kg	180 J1	190 J1	42 J1	51 J1
Benzo(a)Anthracene	ug/kg	1900	2100	640	380 J1
Acenaphthene	ug/kg	190 J1	200 J1	51 J1	420 U
Phenanthrene	ug/kg	2400	2200	660	280 J1
Fluorene	ug/kg	160 J1	150 J1	43 J1	420 U
Naphthalene	ug/kg	98 J1	850 U	410 U	420 U
2-Methylnaphthalene	ug/kg	770 U	850 U	410 U	420 U

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP5-SS05-0/3	SSAS3-RAP5-SS06-0/3	SSAS3-RAP5-SS07-0/3	SSAS3-RAP5-SS08-0/3
Location:		Residential Property 5	Residential Property 5	Residential Property 5	Residential Property 5
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L220107001	A8L220107002	A8L220107003	A8L220107004
EPA Sample ID:		CPHPX	CPHQ0	CPHQ1	CPHQ2
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	420 U	400 U	37 J1	400 U
Pyrene	ug/kg	290 J1	260 J1	390 J1	340 J1
Benzo(g,h,i)perylene	ug/kg	200 J1	180 J1	210 J1	200 J1
Indeno(1,2,3-cd)pyrene	ug/kg	180 J1	150 J1	190 J1	170 J1
Benzo(b)fluoranthene	ug/kg	270 J1	230 J1	340 J1	310 J1
Fluoranthene	ug/kg	360 J1	300 J1	450	360 J1
Benzo(k)fluoranthene	ug/kg	140 J1	96 J1	120 J1	110 J1
Acenaphthylene	ug/kg	420 U	400 U	400 U	400 U
Chrysene	ug/kg	220 J1	190 J1	280 J1	240 J1
Benzo(a)pyrene	ug/kg	240 J1	200 J1	260 J1	230 J1
Dibenz(a,h)anthracene	ug/kg	83 J1	66 J1	79 J1	63 J1
Benzo(a)Anthracene	ug/kg	180 J1	150 J1	220 J1	190 J1
Acenaphthene	ug/kg	420 U	400 U	400 U	400 U
Phenanthrene	ug/kg	190 J1	120 J1	210 J1	170 J1
Fluorene	ug/kg	420 U	400 U	400 U	400 U
Naphthalene	ug/kg	420 U	400 U	400 U	400 U
2-Methylnaphthalene	ug/kg	420 U	400 U	400 U	400 U

J1: Estimated value - Less than reporting limit.
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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP6-SS01-0/3	SSAS3-RAP6-SS02-0/3	SSAS3-RAP6-SS03-0/3	SSAS3-RAP6-SS04-0/3
Location:		Residential Property 6	Residential Property 6	Residential Property 6	Residential Property 6
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L220107006	A8L220107007	A8L220107005	A8L220107008
EPA Sample ID:		CPHQ6	CPHQ8	CPHQ4	CPHQ9
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	130 J1	99 J1	65 J1	72 J1
Pyrene	ug/kg	990	1000	840	740
Benzo(g,h,i)perylene	ug/kg	400 J1	370 J1	410 J1	270 J1
Indeno(1,2,3-cd)pyrene	ug/kg	350 J1	320 J1	360 J1	230 J1
Benzo(b)fluoranthene	ug/kg	780	810	720	480
Fluoranthene	ug/kg	1100	1100	910	700
Benzo(k)fluoranthene	ug/kg	260 J1	270 J1	280 J1	170 J1
Acenaphthylene	ug/kg	420 U	420 U	420 U	450 U
Chrysene	ug/kg	630	640	590	420 J1
Benzo(a)pyrene	ug/kg	580	590	530	390 J1
Dibenz(a,h)anthracene	ug/kg	110 J1	110 J1	120 J1	67 J1
Benzo(a)Anthracene	ug/kg	530	550	440	360 J1
Acenaphthene	ug/kg	52 J1	44 J1	420 U	450 U
Phenanthrene	ug/kg	640	600	450	390 J1
Fluorene	ug/kg	420 U	42 J1	420 U	450 U
Naphthalene	ug/kg	420 U	420 U	420 U	450 U
2-Methylnaphthalene	ug/kg	420 U	420 U	420 U	450 U

J1: Estimated value - Less than reporting limit.
J5: Estimated value - MS/MSD outlier.
J7: Estimated value - Field precision outlier.
J10: Estimated value - Multiple outliers.
U, UJ7: Not Detected.

TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP6-SS05-0/3	SSAS3-RAP6-SS06-0/3	SSAS3-RAP6-SS07-0/3	SSAS3-RAP6-SS08-0/3
Location:		Residential Property 6	Residential Property 6	Residential Property 6	Residential Property 6
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L220107009	A8L220107010	A8L220107011	A8L220107013
EPA Sample ID:		CPHQC	CPHQD	CPHQF	CPHQK
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	84 J1	190 J1	120 J1	200 J1
Pyrene	ug/kg	1000	1600	1300	2000
Benzo(g,h,i)perylene	ug/kg	410 J1	470	440	960
Indeno(1,2,3-cd)pyrene	ug/kg	350 J1	400 J1	380 J1	850
Benzo(b)fluoranthene	ug/kg	810	1000	990	2400
Fluoranthene	ug/kg	1100	1700	1400	2400
Benzo(k)fluoranthene	ug/kg	280 J1	370 J1	340 J1	740
Acenaphthylene	ug/kg	430 U	410 U	430 U	440 U
Chrysene	ug/kg	650	880	850	1600
Benzo(a)pyrene	ug/kg	600	760	770	1500
Dibenz(a,h)anthracene	ug/kg	110 J1	120 J1	110 J1	230 J1
Benzo(a)Anthracene	ug/kg	520	760	710	1300
Acenaphthene	ug/kg	430 U	53 J1	430 U	150 J1
Phenanthrene	ug/kg	530	990	620	1100
Fluorene	ug/kg	430 U	58 J1	430 U	80 J1
Naphthalene	ug/kg	430 U	410 U	430 U	73 J10
2-Methylnaphthalene	ug/kg	430 U	410 U	430 U	46 J1

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP6-SS98-0/3	SSAS3-RAP7-SS01-0/3 MMSD	SSAS3-RAP7-SS02-0/3	SSAS3-RAP7-SS03-0/3
Location:		Residential Property 6	Residential Property 7	Residential Property 7	Residential Property 7
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Duplicate	MS/MSD	Field Sample	Field Sample
Lab Sample ID:		A8L220107012	A8L220107014	A8L220107016	A8L220107017
EPA Sample ID:		CPHQH	CPHQN	CPHQQ	CPHQR
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/17/98
PAHs	Units				
Anthracene	ug/kg	260 J1	1000 J1	400 J1	120 J1
Pyrene	ug/kg	1500	8600 J5	3400 J5	1100 J5
Benzo(g,h,i)perylene	ug/kg	480	4000	1700	390 J1
Indeno(1,2,3-cd)pyrene	ug/kg	430 J1	3500	1500	340 J1
Benzo(b)fluoranthene	ug/kg	1300	8700	3400	990
Fluoranthene	ug/kg	1800 J7	10000	4200	1200
Benzo(k)fluoranthene	ug/kg	390 J1	2800	1200	320 J1
Acenaphthylene	ug/kg	440 U	2100 U	830 U	420 U
Chrysene	ug/kg	1000	6100	2300	760
Benzo(a)pyrene	ug/kg	880	6300	2400	690
Dibenz(a,h)anthracene	ug/kg	140 J1	1000 J1	480 J1	100 J1
Benzo(a)Anthracene	ug/kg	880	5500	2100	630
Acenaphthene	ug/kg	160 J1	620 J1	200 J1	62 J1
Phenanthrene	ug/kg	1300	4800	2000	640
Fluorene	ug/kg	140 J1	360 J1	150 J1	50 J1
Naphthalene	ug/kg	280 J10	240 J1	830 U	57 J1
2-Methylnaphthalene	ug/kg	110 J1	2100 U	830 U	49 J1

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP7-SS04-0/3	SSAS3-RAP7-SS05-0/3	SSAS3-RAP7-SS06-0/3	SSAS3-RAP7-SS07-0/3
Location:		Residential Property 7	Residential Property 7	Residential Property 7	Residential Property 7
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L220107018	A8L220107019	A8L220107020	A8L230102001
EPA Sample ID:		CPHQV	CPHR0	CPHR2	CPJNV
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/17/98	12/17/98	12/17/98	12/18/98
PAHs	Units				
Anthracene	ug/kg	1100 J1	160 J1	380 J1	300 J1
Pyrene	ug/kg	5900 J5	1200 J5	3300 J5	2200 J5
Benzo(g,h,i)perylene	ug/kg	1700 J1	480	1800	1100
Indeno(1,2,3-cd)pyrene	ug/kg	1600 J1	440	1500	990
Benzo(b)fluoranthene	ug/kg	4400	1200	3200	2100
Fluoranthene	ug/kg	7000	1500	4000	2700
Benzo(k)fluoranthene	ug/kg	1600 J1	420	1100	700
Acenaphthylene	ug/kg	1700 U	390 U	890 U	420 U
Chrysene	ug/kg	3400	840	2300	1600
Benzo(a)pyrene	ug/kg	3200	820	2500	1600
Dibenz(a,h)anthracene	ug/kg	420 J1	140 J1	410 J1	280 J1
Benzo(a)Anthracene	ug/kg	3200	750	2000	1400
Acenaphthene	ug/kg	500 J1	64 J1	260 J1	150 J1
Phenanthrene	ug/kg	5500	730	2100	1400
Fluorene	ug/kg	720 J1	51 J1	170 J1	110 J1
Naphthalene	ug/kg	210 J1	40 J1	890 U	50 J1
2-Methylnaphthalene	ug/kg	150 J1	45 J1	890 U	420 U

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP7-SS08-0/3	SSAS3-RAP7-SS92-0/3	SSAS3-RAP8-SS01-0/3	SSAS3-RAP8-SS02-0/3
Location:		Residential Property 7	Residential Property 8	Residential Property 8	Residential Property 8
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Duplicate	Field Sample	Field Sample
Lab Sample ID:		A8L230102002	A8L220107015	A8L230102003	A8L230102004
EPA Sample ID:		CPJNW	CPHQP	CPJNX	CPJP0
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/18/98	12/17/98	12/18/98	12/18/98
PAHs	Units				
Anthracene	ug/kg	570 J1	340 J1	2600 J1	4100 J1
Pyrene	ug/kg	5600 J5	2900 J5	22000 J5	35000 J5
Benzo(g,h,i)perylene	ug/kg	2300	1500	11000	18000
Indeno(1,2,3-cd)pyrene	ug/kg	2100	1300	9800	17000
Benzo(b)fluoranthene	ug/kg	4900	2800	22000	34000
Fluoranthene	ug/kg	5900	3700	28000	39000
Benzo(k)fluoranthene	ug/kg	1800	1000	8600	12000
Acenaphthylene	ug/kg	1300 U	810 U	5100 U	5200 U
Chrysene	ug/kg	3800	2000	16000	24000
Benzo(a)pyrene	ug/kg	4000	2100	17000	27000
Dibenz(a,h)anthracene	ug/kg	610 J1	420 J1	3100 J1	5200 J1
Benzo(a)Anthracene	ug/kg	3200	1800	14000	21000
Acenaphthene	ug/kg	360 J1	190 J1	1700 J1	3200 J1
Phenanthrene	ug/kg	2900	1800	13000	20000
Fluorene	ug/kg	220 J1	140 J1	1200 J1	1700 J1
Naphthalene	ug/kg	1300 U	810 U	5100 U	900 J1
2-Methylnaphthalene	ug/kg	1300 U	810 U	5100 U	5200 U

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP8-SS03-0/3	SSAS3-RAP8-SS04-0/3	SSAS3-RAP8-SS05-0/3	SSAS3-RAP8-SS06-0/3
Location:		Residential Property 8	Residential Property 8	Residential Property 8	Residential Property 8
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L230102005	A8L230102007	A8L230102008	A8L230102009
EPA Sample ID:		CPJP1	CPJP3	CPJP4	CPJP5
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/18/98	12/18/98	12/18/98	12/18/98
PAHs	Units				
Anthracene	ug/kg	1400 J1	1700 J1	970 J1	1500 J1
Pyrene	ug/kg	11000 J5	15000 J5	11000 J5	14000 J5
Benzo(g,h,i)perylene	ug/kg	6400	10000	5700	8900
Indeno(1,2,3-cd)pyrene	ug/kg	5600	8900	4900	7700
Benzo(b)fluoranthene	ug/kg	12000	17000	9800	16000
Fluoranthene	ug/kg	14000	19000	12000	16000
Benzo(k)fluoranthene	ug/kg	4200	6400	3500	5300
Acenaphthylene	ug/kg	3200 U	3100 U	2400 U	3200 U
Chrysene	ug/kg	8600	12000	6800	10000
Benzo(a)pyrene	ug/kg	9400	14000	7800	13000
Dibenz(a,h)anthracene	ug/kg	1800 J1	2900 J1	1500 J1	2500 J1
Benzo(a)Anthracene	ug/kg	7300	10000	6300	9200
Acenaphthene	ug/kg	1200 J1	1700 J1	660 J1	1500 J1
Phenanthrene	ug/kg	6900	9000	4900	7400
Fluorene	ug/kg	560 J1	750 J1	310 J1	620 J1
Naphthalene	ug/kg	360 J1	490 J1	2400 U	480 J1
2-Methylnaphthalene	ug/kg	3200 U	3100 U	2400 U	3200 U

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PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP8-SS07-0/3	SSAS3-RAP8-SS08-0/3	SSAS3-RAP8-SS97-0/3	SSAS3-RAP9-SS01-0/3
Location:		Residential Property 8	Residential Property 8	Residential Property 9	Residential Property 9
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Duplicate	Field Sample
Lab Sample ID:		A8L230102010	A8L230102011	A8L230102006	A8L230102012
EPA Sample ID:		CPJP7	CPJP8	CPJP2	CPJP9
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/18/98	12/18/98	12/18/98	12/18/98
PAHs	Units				
Anthracene	ug/kg	1900 J1	1200 J1	1800 J1	120 J1
Pyrene	ug/kg	21000 J5	9900 J5	20000	1100
Benzo(g,h,i)perylene	ug/kg	10000	6500	10000	430
Indeno(1,2,3-cd)pyrene	ug/kg	9300	5600	9000	400 J1
Benzo(b)fluoranthene	ug/kg	19000	10000	18000	970
Fluoranthene	ug/kg	22000	12000	20000	1200
Benzo(k)fluoranthene	ug/kg	7800	3900	7600	370 J1
Acenaphthylene	ug/kg	4500 U	2700 U	4400 U	410 U
Chrysene	ug/kg	14000	7400	13000	770
Benzo(a)pyrene	ug/kg	16000	8500	15000	750
Dibenz(a,h)anthracene	ug/kg	3000 J1	1500 J1	2500 J1	110 J1
Benzo(a)Anthracene	ug/kg	12000	6400	12000	640
Acenaphthene	ug/kg	1600 J1	1000 J1	1600 J1	75 J1
Phenanthrene	ug/kg	10000	6500	9600	740
Fluorene	ug/kg	730 J10	500 J1	4400 UJ7	61 J1
Naphthalene	ug/kg	4500 UJ7	490 J1	530 J10	410 U
2-Methylnaphthalene	ug/kg	4500 U	2700 U	4400 U	410 U

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP9-SS02-0/3	SSAS3-RAP9-SS03-0/3	SSAS3-RAP9-SS04-0/3	SSAS3-RAP9-SS05-0/3
Location:		Residential Property 9	Residential Property 9	Residential Property 9	Residential Property 9
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L230102013	A8L230102014	A8L230102015	A8L230102016
EPA Sample ID:		CPJPA	CPJPC	CPJPF	CPJPG
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/18/98	12/18/98	12/18/98	12/18/98
PAHs	Units				
Anthracene	ug/kg	49 J1	320 J1	990 J1	560 J1
Pyrene	ug/kg	460	3200	10000	4700
Benzo(g,h,i)perylene	ug/kg	270 J1	1400	5400	1900
Indeno(1,2,3-cd)pyrene	ug/kg	240 J1	1300	4500	1800
Benzo(b)fluoranthene	ug/kg	550	3000	9400	4300
Fluoranthene	ug/kg	570	3600	11000	5500
Benzo(k)fluoranthene	ug/kg	200 J1	1200	3300	1700
Acenaphthylene	ug/kg	400 U	850 U	2700 U	1000 U
Chrysene	ug/kg	390 J1	2300	6800	3400
Benzo(a)pyrene	ug/kg	420	2400	7600	3400
Dibenz(a,h)anthracene	ug/kg	69 J1	380 J1	1200 J1	510 J1
Benzo(a)Anthracene	ug/kg	320 J1	1900	6000	3000
Acenaphthene	ug/kg	400 U	230 J1	580 J1	280 J1
Phenanthrene	ug/kg	250 J1	2000	4600	2700
Fluorene	ug/kg	400 U	140 J1	2700 U	200 J1
Naphthalene	ug/kg	400 U	110 J1	2700 U	1000 U
2-Methylnaphthalene	ug/kg	400 U	850 U	2700 U	1000 U

J1: Estimated value - Less than reporting limit.
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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP9-SS06-0/3	SSAS3-RAP9-SS07-0/3	SSAS3-RAP9-SS08-0/3	SSAS3-RAP9-SS95-0/3
Location:		Residential Property 9	Residential Property 9	Residential Property 9	Residential Property 9
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Duplicate
Lab Sample ID:		A8L230102018	A8L230102019	A8L230102020	A8L230102017
EPA Sample ID:		CPJPJ	CPJPK	CPJPL	CPJPH
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/18/98	12/18/98	12/18/98	12/18/98
PAHs	Units				
Anthracene	ug/kg	1000 J1	840 J1	1000 J1	490 J1
Pyrene	ug/kg	8800	7300	9400	4500
Benzo(g,h,i)perylene	ug/kg	4900	4600	6100	1900
Indeno(1,2,3-cd)pyrene	ug/kg	4500	4200	5600	1800
Benzo(b)fluoranthene	ug/kg	10000	9300	11000	4400
Fluoranthene	ug/kg	10000	8200	9600	5100
Benzo(k)fluoranthene	ug/kg	4000	3200	4100	1600
Acenaphthylene	ug/kg	1700 U	1600 U	2100 U	1000 U
Chrysene	ug/kg	7100	6100	7200	3200
Benzo(a)pyrene	ug/kg	8200	7200	8800	3400
Dibenz(a,h)anthracene	ug/kg	1400 J1	1200 J1	1600 J1	510 J1
Benzo(a)Anthracene	ug/kg	5900	5000	6200	2900
Acenaphthene	ug/kg	900 J1	800 J1	1000 J1	270 J1
Phenanthrene	ug/kg	4900	4100	4700	2300
Fluorene	ug/kg	380 J1	330 J1	390 J1	160 J1
Naphthalene	ug/kg	310 J1	270 J1	290 J1	1000 U
2-Methylnaphthalene	ug/kg	1700 U	1600 U	2100 U	1000 U

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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Client Sample ID:		SSAS3-RAP10-SS01-0/3	SSAS3-RAP10-SS02-0/3	SSAS3-RAP10-SS03-0/3	SSAS3-RAP10-SS04-0/3
Location:		Residential Property 10	Residential Property 10	Residential Property 10	Residential Property 10
Depth Range:		0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
Sample Type:		Field Sample	Field Sample	Field Sample	Field Sample
Lab Sample ID:		A8L230155001	A8L230155002	A8L230155003	A8L230155004
EPA Sample ID:		CPK65	CPK6A	CPK6E	CPK6F
Sample Type:		N1	N1	N1	N1
Sampling Date:		12/21/98	12/21/98	12/21/98	12/21/98
PAHs	Units				
Anthracene	ug/kg	920 J1	800 J1	940 J1	780 J1
Pyrene	ug/kg	11000	12000	9100	10000
Benzo(g,h,i)perylene	ug/kg	2400	2800	2200	2600
Indeno(1,2,3-cd)pyrene	ug/kg	2800	3500	2100	2300
Benzo(b)fluoranthene	ug/kg	9300	10000	6800	7200
Fluoranthene	ug/kg	11000	9700	8400	6800
Benzo(k)fluoranthene	ug/kg	4200	3300	3000	2300
Acenaphthylene	ug/kg	2000 U	2100 U	1600 U	1700 U
Chrysene	ug/kg	6800	7000	4900	5100
Benzo(a)pyrene	ug/kg	6700	7600	5300	5200
Dibenz(a,h)anthracene	ug/kg	490 J1	570 J1	300 J1	700 J1
Benzo(a)Anthracene	ug/kg	5800	6200	4500	5200
Acenaphthene	ug/kg	670 J10	650 J10	700 J10	600 J10
Phenanthrene	ug/kg	4800	4200	4500	3800
Fluorene	ug/kg	420 J1	340 J1	320 J1	300 J1
Naphthalene	ug/kg	270 J1	240 J1	320 J1	280 J1
2-Methylnaphthalene	ug/kg	2000 U	2100 U	1600 U	1700 U

J1: Estimated value - Less than reporting limit.
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TABLE 3.1
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
SOIL SAMPLING DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP10-SS05-0/3	SSAS3-RAP10-SS06-0/3	SSAS3-RAP10-SS07-0/3	SSAS3-RAP10-SS08-0/3
	Location:	Residential Property 10	Residential Property 10	Residential Property 10	Residential Property 10
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L230155005	A8L230155006	A8L230155007	A8L230155008
	EPA Sample ID:	CPK6H	CPK6K	CPK6M	CPK6Q
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/21/98	12/21/98	12/21/98	12/21/98
PAHs	Units				
Anthracene	ug/kg	1900 J1	1400	1100 J1	2000 J1
Pyrene	ug/kg	22000	19000	14000	16000
Benzo(g,h,i)perylene	ug/kg	5300	4800	3300	3400
Indeno(1,2,3-cd)pyrene	ug/kg	4700	5400	4100	3600
Benzo(b)fluoranthene	ug/kg	16000	13000	11000	12000
Fluoranthene	ug/kg	16000	17000	11000	16000
Benzo(k)fluoranthene	ug/kg	5500	5100	4400	4000
Acenaphthylene	ug/kg	2800 U	1100 U	2900 U	3100 U
Chrysene	ug/kg	11000	9700	7700	8200
Benzo(a)pyrene	ug/kg	12000	11000	8600	9300
Dibenz(a,h)anthracene	ug/kg	1000 J1	1300	760 J1	560 J1
Benzo(a)Anthracene	ug/kg	11000	9900	6900	7600
Acenaphthene	ug/kg	1400 J10	1100 J5	920 J10	1200 J10
Phenanthrene	ug/kg	9700	6800	5500	8700
Fluorene	ug/kg	750 J1	430 J1	360 J1	960 J1
Naphthalene	ug/kg	510 J1	450 J1	300 J1	350 J1
2-Methylnaphthalene	ug/kg	2800 U	1100 U	2900 U	3100 U

J1: Estimated value - Less than reporting limit.
J5: Estimated value - MS/MSD outlier.
J7: Estimated value - Field precision outlier.
J10: Estimated value - Multiple outliers.
U, UJ7: Not Detected.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP1-SS01-0/3	SSAS3-RAP1-SS02-0/3	SSAS3-RAP1-SS03-0/3	SSAS3-RAP1-SS04-0/3
	Location:	Residential Property 1	Residential Property 1	Residential Property 1	Residential Property 1
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L210159001	A8L210159002	A8L210159004	A8L210159005
	EPA Sample ID:	CPH62	CPH68	CPH6F	CPH6G
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/16/98	12/16/98	12/16/98	12/16/98
Compound	Relative Potency				
Benzo(a)anthracene (ug/kg)	0.1	2000	2500	2200	1600
Benzo(a)pyrene (ug/kg)	1	2400	2200	2400	1500
Benzo(b)fluoranthene (ug/kg)	0.1	3200	3500	3400	2400
Benzo(k)fluoranthene (ug/kg)	0.01	1000	900	1000	540
Chrysene (ug/kg)	0.001	2100	2400	2500	1600
Dibenz(a,h)anthracene (ug/kg)	1	260 J1	270 J1	370 J1	230 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	1300	950	1200	750
Benzo(a)pyrene (ug/kg)		2400	2200	2400	1500
Total BAP equivalents (ug/kg)		3322	3176	3463	2212
Total BAP equivalents (mg/kg)		3.32	3.18	3.46	2.21

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP1-SS05-0/3	SSAS3-RAP1-SS06-0/3-MMSD	SSAS3-RAP1-SS07-0/3	SSAS3-RAP1-SS08-0/3
	Location:	Residential Property 1	Residential Property 1	Residential Property 1	Residential Property 1
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	MS/MSD	Field Sample	Field Sample
	Lab Sample ID:	A8L210159006	A8L210159007	A8L210159009	A8L210159008
	EPA Sample ID:	CPH6J	CPH6K	CPH6N	CPH6L
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/16/98	12/16/98	12/16/98	12/16/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	1800	2200	1500	4800
Benzo(a)pyrene (ug/kg)	1	1700	1500	1400	3800
Benzo(b)fluoranthene (ug/kg)	0.1	2800	2800	2400	5400
Benzo(k)fluoranthene (ug/kg)	0.01	770	810	630	2100
Chrysene (ug/kg)	0.001	1800	2100	1400	4600
Dibenz(a,h)anthracene (ug/kg)	1	230 J1	210 J1	190 J1	440 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	920	1000	830	1700 J1
Benzo(a)pyrene (ug/kg)		1700	1500	1400	3800
Total BAP equivalents (ug/kg)		2492	2320	2071	5456
Total BAP equivalents (mg/kg)		2.49	2.32	2.07	5.46

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP1-SS93-0/3	SSAS3-RAP2-SS01-0/3	SSAS3-RAP2-SS02-0/3	SSAS3-RAP2-SS03-0/3
	Location:	Residential Property 2	Residential Property 2	Residential Property 2	Residential Property 2
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Duplicate	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L210159003	A8L210159011	A8L210159012	A8L210159013
	EPA Sample ID:	CPH6E	CPH6R	CPH6T	CPH6V
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/16/98	12/16/98	12/16/98	12/16/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	2000	11000	1800	1500
Benzo(a)pyrene (ug/kg)	1	2000	9100	1600	1200
Benzo(b)fluoranthene (ug/kg)	0.1	3100	14000	2700	2300
Benzo(k)fluoranthene (ug/kg)	0.01	990	5400	610	520
Chrysene (ug/kg)	0.001	2100	11000	1700	1500
Dibenz(a,h)anthracene (ug/kg)	1	280 J1	1100 J1	180 J1	160 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	1000	2800 J1	690	540
Benzo(a)pyrene (ug/kg)		2000	9100	1600	1200
Total BAP equivalents (ug/kg)		2902	13045	2307	1801
Total BAP equivalents (mg/kg)		2.90	13.05	2.31	1.80

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP2-SS04-0/3	SSAS3-RAP2-SS05-0/3	SSAS3-RAP2-SS06-0/3	SSAS3-RAP2-SS07-0/3
	Location:	Residential Property 2	Residential Property 2	Residential Property 2	Residential Property 2
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L210159015	A8L210159014	A8L210159018	A8L210159016
	EPA Sample ID:	CPH70	CPH6X	CPH77	CPH71
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/16/98	12/16/98	12/16/98	12/16/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	1900	1500	1200	6000
Benzo(a)pyrene (ug/kg)	1	1900	1500	1300	6600
Benzo(b)fluoranthene (ug/kg)	0.1	3000	2400	2100	10000
Benzo(k)fluoranthene (ug/kg)	0.01	780	620	550	2800
Chrysene (ug/kg)	0.001	2000	1500	1200	6000
Dibenz(a,h)anthracene (ug/kg)	1	200 J1	170 J1	170 J1	1100 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	790	790	580	3900
Benzo(a)pyrene (ug/kg)		1900	1500	1300	6600
Total BAP equivalents (ug/kg)		2679	2147	1865	9724
Total BAP equivalents (mg/kg)		2.68	2.15	1.86	9.72

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	**SSAS3-RAP2-SS08-0/3**	**SSAS3-RAP2-SS96-0/3**	**SSAS3-RAP3-SS01-0/3**	**SSAS3-RAP3-SS02-0/3**
	Location:	**Residential Property 2**	**Residential Property 2**	**Residential Property 3**	**Residential Property 3**
	Depth Range:	**0 to 3 inches**	**0 to 3 inches**	**0 to 3 inches**	**0 to 3 inches**
	Sample Type:	**Field Sample**	**Duplicate**	**Field Sample**	**Field Sample**
	Lab Sample ID:	**A8L210159017**	**A8L210159010**	**A8L210159019**	**A8L210162001**
	EPA Sample ID:	**CPH75**	**CPH6Q**	**CPH79**	**CPH7X**
	Sample Type:	**N1**	**N1**	**N1**	**N1**
	Sampling Date:	**12/16/98**	**12/16/98**	**12/16/98**	**12/17/98**
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	1100 J1	1200	620	1700
Benzo(a)pyrene (ug/kg)	1	1300 J1	1300	600	1900
Benzo(b)fluoranthene (ug/kg)	0.1	1900 J1	2100	930	3000
Benzo(k)fluoranthene (ug/kg)	0.01	440 J1	600	300 J1	910
Chrysene (ug/kg)	0.001	1300 J1	1200	690	1800
Dibenz(a,h)anthracene (ug/kg)	1	230 J1	210 J1	63 J1	260 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	730 J1	730	290 J1	820
Benzo(a)pyrene (ug/kg)		1300	1300	600	1900
Total BAP equivalents (ug/kg)		1909	1920	851	2723
Total BAP equivalents (mg/kg)		1.91	1.92	0.85	2.72

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP3-SS03-0/3	SSAS3-RAP3-SS04-0/3	SSAS3-RAP3-SS05-0/3	SSAS3-RAP3-SS06-0/3
	Location:	Residential Property 3	Residential Property 3	Residential Property 3	Residential Property 3
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L210162002	A8L210162003	A8L210162004	A8L210162005
	EPA Sample ID:	CPH86	CPH87	CPH89	CPH8A
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	Relative Potency				
Benzo(a)anthracene (ug/kg)	0.1	4000	1600	1700	1100
Benzo(a)pyrene (ug/kg)	1	3700	1300	1800	1000
Benzo(b)fluoranthene (ug/kg)	0.1	5600	2600	2800	1700
Benzo(k)fluoranthene (ug/kg)	0.01	2400	530	900	400 J1
Chrysene (ug/kg)	0.001	4000	1700	1800	1200
Dibenz(a,h)anthracene (ug/kg)	1	570 J1	190 J1	240 J1	96 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	1800	600	670	390 J1
Benzo(a)pyrene (ug/kg)		3700	1300	1800	1000
Total BAP equivalents (ug/kg)		5438	1977	2568	1420
Total BAP equivalents (mg/kg)		5.44	1.98	2.57	1.42

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP3-SS07-0/3	SSAS3-RAP3-SS08-0/3	SSAS3-RAP3-SS91-0/3	SSAS3-RAP4-SS01-0/3
	Location:	Residential Property 3	Residential Property 3	Residential Property 3	Residential Property 4
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Duplicate	Field Sample
	Lab Sample ID:	A8L210162006	A8L210162007	A8L210159020	A8L210162008
	EPA Sample ID:	CPH8C	CPH8D	CPH7C	CPH8E
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/16/98	12/17/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	1300	2600	550	1300
Benzo(a)pyrene (ug/kg)	1	1400	2300	630	980
Benzo(b)fluoranthene (ug/kg)	0.1	2100	3600	930	1700
Benzo(k)fluoranthene (ug/kg)	0.01	590	1100	350 J1	420
Chrysene (ug/kg)	0.001	1300	2700	650	1200
Dibenz(a,h)anthracene (ug/kg)	1	130 J1	280 J1	91 J1	120 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	500	910 J1	300 J1	440
Benzo(a)pyrene (ug/kg)		1400	2300	630	980
Total BAP equivalents (ug/kg)		1927	3305	903	1449
Total BAP equivalents (mg/kg)		1.93	3.30	0.90	1.45

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP4-SS02-0/3	SSAS3-RAP4-SS03-0/3	SSAS3-RAP4-SS04-0/3	SSAS3-RAP4-SS05-0/3
	Location:	Residential Property 4	Residential Property 4	Residential Property 4	Residential Property 4
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L210162009	A8L210162010	A8L210162012	A8L210162013
	EPA Sample ID:	CPH8H	CPH8J	CPH8L	CPH8M
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	1900	1300	1800	2200
Benzo(a)pyrene (ug/kg)	1	2000	940	1400	2000
Benzo(b)fluoranthene (ug/kg)	0.1	2500	1900	2600	2600
Benzo(k)fluoranthene (ug/kg)	0.01	980	430 J1	580	910 J1
Chrysene (ug/kg)	0.001	1900	1400	1300	2400
Dibenz(a,h)anthracene (ug/kg)	1	200 J1	88 J1	130 J1	160 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	890	540	670	750 J1
Benzo(a)pyrene (ug/kg)		2000	940	1400	2000
Total BAP equivalents (ug/kg)		2741	1408	2044	2727
Total BAP equivalents (mg/kg)		2.74	1.41	2.04	2.73

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP4-SS06-0/3	SSAS3-RAP4-SS07-0/3-MMSD	SSAS3-RAP4-SS08-0/3	SSAS3-RAP4-SS93-0/3
	Location:	Residential Property 4	Residential Property 4	Residential Property 4	Residential Property 4
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	MS/MSD	Field Sample	Duplicate
	Lab Sample ID:	A8L210162014	A8L210162015	A8L210162016	A8L210162011
	EPA Sample ID:	CPH8N	CPH8Q	CPH8R	CPH8K
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	2100	1700	1700	1400
Benzo(a)pyrene (ug/kg)	1	1800	1400	1400	1400
Benzo(b)fluoranthene (ug/kg)	0.1	2900	2700	2100	1700
Benzo(k)fluoranthene (ug/kg)	0.01	640 J1	740	670	900
Chrysene (ug/kg)	0.001	1600	1700	1600	1900
Dibenz(a,h)anthracene (ug/kg)	1	220 J1	150 J1	88 J1	110 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	650 J1	670 J1	490 J1	560
Benzo(a)pyrene (ug/kg)		1800	1400	1400	1400
Total BAP equivalents (ug/kg)		2593	2066	1925	1887
Total BAP equivalents (mg/kg)		2.59	2.07	1.93	1.89

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP5-SS01-0/3	SSAS3-RAP5-SS02-0/3	SSAS3-RAP5-SS03-0/3	SSAS3-RAP5-SS04-0/3
	Location:	Residential Property 5	Residential Property 5	Residential Property 5	Residential Property 5
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L210162017	A8L210162018	A8L210162019	A8L210162020
	EPA Sample ID:	CPH8V	CPH8W	CPH8X	CPH90
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	1900	2100	640	380 J1
Benzo(a)pyrene (ug/kg)	1	1900	2000	570	410 J1
Benzo(b)fluoranthene (ug/kg)	0.1	2600	2600	800	570
Benzo(k)fluoranthene (ug/kg)	0.01	1100	890	330 J1	160 J1
Chrysene (ug/kg)	0.001	1900	2100	630	410 J1
Dibenz(a,h)anthracene (ug/kg)	1	180 J1	190 J1	42 J1	51 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	910	670 J1	170 J1	140 J1
Benzo(a)pyrene (ug/kg)		1900	2000	570	410
Total BAP equivalents (ug/kg)		2634	2738	777	572
Total BAP equivalents (mg/kg)		2.63	2.74	0.78	0.57

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP5-SS05-0/3	SSAS3-RAP5-SS06-0/3	SSAS3-RAP5-SS07-0/3	SSAS3-RAP5-SS08-0/3
	Location:	Residential Property 5	Residential Property 5	Residential Property 5	Residential Property 5
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L220107001	A8L220107002	A8L220107003	A8L220107004
	EPA Sample ID:	CPHPX	CPHQ0	CPHQ1	CPHQ2
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	180 J1	150 J1	220 J1	190 J1
Benzo(a)pyrene (ug/kg)	1	240 J1	200 J1	260 J1	230 J1
Benzo(b)fluoranthene (ug/kg)	0.1	270 J1	230 J1	340 J1	310 J1
Benzo(k)fluoranthene (ug/kg)	0.01	140 J1	96 J1	120 J1	110 J1
Chrysene (ug/kg)	0.001	220 J1	190 J1	280 J1	240 J1
Dibenz(a,h)anthracene (ug/kg)	1	83 J1	66 J1	79 J1	63 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	180 J1	150 J1	190 J1	170 J1
Benzo(a)pyrene (ug/kg)		240	200	260	230
Total BAP equivalents (ug/kg)		388	320	415	361
Total BAP equivalents (mg/kg)		0.39	0.32	0.42	0.36

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP6-SS01-0/3	SSAS3-RAP6-SS02-0/3	SSAS3-RAP6-SS03-0/3	SSAS3-RAP6-SS04-0/3
	Location:	Residential Property 6	Residential Property 6	Residential Property 6	Residential Property 6
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L220107006	A8L220107007	A8L220107005	A8L220107008
	EPA Sample ID:	CPHQ6	CPHQ8	CPHQ4	CPHQ9
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	Relative Potency				
Benzo(a)anthracene (ug/kg)	0.1	530	550	440	360 J1
Benzo(a)pyrene (ug/kg)	1	580	590	530	390 J1
Benzo(b)fluoranthene (ug/kg)	0.1	780	810	720	480
Benzo(k)fluoranthene (ug/kg)	0.01	260 J1	270 J1	280 J1	170 J1
Chrysene (ug/kg)	0.001	630	640	590	420 J1
Dibenz(a,h)anthracene (ug/kg)	1	110 J1	110 J1	120 J1	67 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	350 J1	320 J1	360 J1	230 J1
Benzo(a)pyrene (ug/kg)		580	590	530	390
Total BAP equivalents (ug/kg)		859	871	805	566
Total BAP equivalents (mg/kg)		0.86	0.87	0.81	0.57

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP6-SS05-0/3	SSAS3-RAP6-SS06-0/3	SSAS3-RAP6-SS07-0/3	SSAS3-RAP6-SS08-0/3
	Location:	Residential Property 6	Residential Property 6	Residential Property 6	Residential Property 6
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L220107009	A8L220107010	A8L220107011	A8L220107013
	EPA Sample ID:	CPHQC	CPHQD	CPHQF	CPHQK
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	520	760	710	1300
Benzo(a)pyrene (ug/kg)	1	600	760	770	1500
Benzo(b)fluoranthene (ug/kg)	0.1	810	1000	990	2400
Benzo(k)fluoranthene (ug/kg)	0.01	280 J1	370 J1	340 J1	740
Chrysene (ug/kg)	0.001	650	880	850	1600
Dibenz(a,h)anthracene (ug/kg)	1	110 J1	120 J1	110 J1	230 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	350 J1	400 J1	380 J1	850
Benzo(a)pyrene (ug/kg)		600	760	770	1500
Total BAP equivalents (ug/kg)		881	1101	1092	2194
Total BAP equivalents (mg/kg)		0.88	1.10	1.09	2.19

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP6-SS98-0/3	SSAS3-RAP7-SS01-0/3 MMSD	SSAS3-RAP7-SS02-0/3	SSAS3-RAP7-SS03-0/3
	Location:	Residential Property 6	Residential Property 7	Residential Property 7	Residential Property 7
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Duplicate	MS/MSD	Field Sample	Field Sample
	Lab Sample ID:	A8L220107012	A8L220107014	A8L220107016	A8L220107017
	EPA Sample ID:	CPHQH	CPHQN	CPHQQ	CPHQR
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/17/98	12/17/98	12/17/98	12/17/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	880	5500	2100	630
Benzo(a)pyrene (ug/kg)	1	880	6300	2400	690
Benzo(b)fluoranthene (ug/kg)	0.1	1300	8700	3400	990
Benzo(k)fluoranthene (ug/kg)	0.01	390 J1	2800	1200	320 J1
Chrysene (ug/kg)	0.001	1000	6100	2300	760
Dibenz(a,h)anthracene (ug/kg)	1	140 J1	1000 J1	480 J1	100 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	430 J1	3500	1500	340 J1
Benzo(a)pyrene (ug/kg)		880	6300	2400	690
Total BAP equivalents (ug/kg)		1286	9104	3594	990
Total BAP equivalents (mg/kg)		1.29	9.10	3.59	0.99

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	**SSAS3-RAP7-SS04-0/3**	**SSAS3-RAP7-SS05-0/3**	**SSAS3-RAP7-SS06-0/3**	**SSAS3-RAP7-SS07-0/3**
	Location:	**Residential Property 7**	**Residential Property 7**	**Residential Property 7**	**Residential Property 7**
	Depth Range:	**0 to 3 inches**	**0 to 3 inches**	**0 to 3 inches**	**0 to 3 inches**
	Sample Type:	**Field Sample**	**Field Sample**	**Field Sample**	**Field Sample**
	Lab Sample ID:	**A8L220107018**	**A8L220107019**	**A8L220107020**	**A8L230102001**
	EPA Sample ID:	**CPHQV**	**CPHR0**	**CPHR2**	**CPJNV**
	Sample Type:	**N1**	**N1**	**N1**	**N1**
	Sampling Date:	**12/17/98**	**12/17/98**	**12/17/98**	**12/18/98**
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	3200	750	2000	1400
Benzo(a)pyrene (ug/kg)	1	3200	820	2500	1600
Benzo(b)fluoranthene (ug/kg)	0.1	4400	1200	3200	2100
Benzo(k)fluoranthene (ug/kg)	0.01	1600 J1	420	1100	700
Chrysene (ug/kg)	0.001	3400	840	2300	1600
Dibenz(a,h)anthracene (ug/kg)	1	420 J1	140 J1	410 J1	280 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	1600 J1	440	1500	990
Benzo(a)pyrene (ug/kg)		3200	820	2500	1600
Total BAP equivalents (ug/kg)		4559	1204	3593	2338
Total BAP equivalents (mg/kg)		4.56	1.20	3.59	2.34

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP7-SS08-0/3	SSAS3-RAP7-SS92-0/3	SSAS3-RAP8-SS01-0/3	SSAS3-RAP8-SS02-0/3
	Location:	Residential Property 7	Residential Property 8	Residential Property 8	Residential Property 8
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Duplicate	Field Sample	Field Sample
	Lab Sample ID:	A8L230102002	A8L220107015	A8L230102003	A8L230102004
	EPA Sample ID:	CPJNW	CPHQP	CPJNX	CPJP0
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/18/98	12/17/98	12/18/98	12/18/98
Compound	Relative Potency				
Benzo(a)anthracene (ug/kg)	0.1	3200	1800	14000	21000
Benzo(a)pyrene (ug/kg)	1	4000	2100	17000	27000
Benzo(b)fluoranthene (ug/kg)	0.1	4900	2800	22000	34000
Benzo(k)fluoranthene (ug/kg)	0.01	1800	1000	8600	12000
Chrysene (ug/kg)	0.001	3800	2000	16000	24000
Dibenz(a,h)anthracene (ug/kg)	1	610 J1	420 J1	3100 J1	5200 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	2100	1300	9800	17000
Benzo(a)pyrene (ug/kg)		4000	2100	17000	27000
Total BAP equivalents (ug/kg)		5652	3122	24782	39544
Total BAP equivalents (mg/kg)		5.65	3.12	24.78	39.54

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP8-SS03-0/3	SSAS3-RAP8-SS04-0/3	SSAS3-RAP8-SS05-0/3	SSAS3-RAP8-SS06-0/3
	Location:	Residential Property 8	Residential Property 8	Residential Property 8	Residential Property 8
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L230102005	A8L230102007	A8L230102008	A8L230102009
	EPA Sample ID:	CPJP1	CPJP3	CPJP4	CPJP5
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/18/98	12/18/98	12/18/98	12/18/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	7300	10000	6300	9200
Benzo(a)pyrene (ug/kg)	1	9400	14000	7800	13000
Benzo(b)fluoranthene (ug/kg)	0.1	12000	17000	9800	16000
Benzo(k)fluoranthene (ug/kg)	0.01	4200	6400	3500	5300
Chrysene (ug/kg)	0.001	8600	12000	6800	10000
Dibenz(a,h)anthracene (ug/kg)	1	1800 J1	2900 J1	1500 J1	2500 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	5600	8900	4900	7700
Benzo(a)pyrene (ug/kg)		9400	14000	7800	13000
Total BAP equivalents (ug/kg)		13741	20566	11442	18853
Total BAP equivalents (mg/kg)		13.74	20.57	11.44	18.85

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP8-SS07-0/3	SSAS3-RAP8-SS08-0/3	SSAS3-RAP8-SS97-0/3	SSAS3-RAP9-SS01-0/3
	Location:	Residential Property 8	Residential Property 8	Residential Property 9	Residential Property 9
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Duplicate	Field Sample
	Lab Sample ID:	A8L230102010	A8L230102011	A8L230102006	A8L230102012
	EPA Sample ID:	CPJP7	CPJP8	CPJP2	CPJP9
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/18/98	12/18/98	12/18/98	12/18/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	12000	6400	12000	640
Benzo(a)pyrene (ug/kg)	1	16000	8500	15000	750
Benzo(b)fluoranthene (ug/kg)	0.1	19000	10000	18000	970
Benzo(k)fluoranthene (ug/kg)	0.01	7800	3900	7600	370 J1
Chrysene (ug/kg)	0.001	14000	7400	13000	770
Dibenz(a,h)anthracene (ug/kg)	1	3000 J1	1500 J1	2500 J1	110 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	9300	5600	9000	400 J1
Benzo(a)pyrene (ug/kg)		16000	8500	15000	750
Total BAP equivalents (ug/kg)		23122	12246	21489	1065
Total BAP equivalents (mg/kg)		23.12	12.25	21.49	1.07

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP9-SS02-0/3	SSAS3-RAP9-SS03-0/3	SSAS3-RAP9-SS04-0/3	SSAS3-RAP9-SS05-0/3
	Location:	Residential Property 9	Residential Property 9	Residential Property 9	Residential Property 9
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L230102013	A8L230102014	A8L230102015	A8L230102016
	EPA Sample ID:	CPJPA	CPJPC	CPJPF	CPJPG
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/18/98	12/18/98	12/18/98	12/18/98
Compound	Relative Potency				
Benzo(a)anthracene (ug/kg)	0.1	320 J1	1900	6000	3000
Benzo(a)pyrene (ug/kg)	1	420	2400	7600	3400
Benzo(b)fluoranthene (ug/kg)	0.1	550	3000	9400	4300
Benzo(k)fluoranthene (ug/kg)	0.01	200 J1	1200	3300	1700
Chrysene (ug/kg)	0.001	390 J1	2300	6800	3400
Dibenz(a,h)anthracene (ug/kg)	1	69 J1	380 J1	1200 J1	510 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	240 J1	1300	4500	1800
Benzo(a)pyrene (ug/kg)		420	2400	7600	3400
Total BAP equivalents (ug/kg)		602	3414	10830	4840
Total BAP equivalents (mg/kg)		0.60	3.41	10.83	4.84

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP9-SS06-0/3	SSAS3-RAP9-SS07-0/3	SSAS3-RAP9-SS08-0/3	SSAS3-RAP9-SS95-0/3
	Location:	Residential Property 9	Residential Property 9	Residential Property 9	Residential Property 9
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Duplicate
	Lab Sample ID:	A8L230102018	A8L230102019	A8L230102020	A8L230102017
	EPA Sample ID:	CPJPJ	CPJPK	CPJPL	CPJPH
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/18/98	12/18/98	12/18/98	12/18/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	5900	5000	6200	2900
Benzo(a)pyrene (ug/kg)	1	8200	7200	8800	3400
Benzo(b)fluoranthene (ug/kg)	0.1	10000	9300	11000	4400
Benzo(k)fluoranthene (ug/kg)	0.01	4000	3200	4100	1600
Chrysene (ug/kg)	0.001	7100	6100	7200	3200
Dibenz(a,h)anthracene (ug/kg)	1	1400 J1	1200 J1	1600 J1	510 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	4500	4200	5600	1800
Benzo(a)pyrene (ug/kg)		8200	7200	8800	3400
Total BAP equivalents (ug/kg)		11687	10288	12728	4839
Total BAP equivalents (mg/kg)		11.69	10.29	12.73	4.84

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP10-SS01-0/3	SSAS3-RAP10-SS02-0/3	SSAS3-RAP10-SS03-0/3	SSAS3-RAP10-SS04-0/3
	Location:	Residential Property 10	Residential Property 10	Residential Property 10	Residential Property 10
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L230155001	A8L230155002	A8L230155003	A8L230155004
	EPA Sample ID:	CPK65	CPK6A	CPK6E	CPK6F
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/21/98	12/21/98	12/21/98	12/21/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	5800	6200	4500	5200
Benzo(a)pyrene (ug/kg)	1	6700	7600	5300	5200
Benzo(b)fluoranthene (ug/kg)	0.1	9300	10000	6800	7200
Benzo(k)fluoranthene (ug/kg)	0.01	4200	3300	3000	2300
Chrysene (ug/kg)	0.001	6800	7000	4900	5100
Dibenz(a,h)anthracene (ug/kg)	1	490 J1	570 J1	300 J1	700 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	2800	3500	2100	2300
Benzo(a)pyrene (ug/kg)		6700	7600	5300	5200
Total BAP equivalents (ug/kg)		9029	10180	6975	7398
Total BAP equivalents (mg/kg)		9.03	10.18	6.97	7.40

J1: Estimated value - Less than reporting limit.

TABLE 3.2
PHASE III RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAM
BENZO(A)PYRENE EQUIVALENTS DATA

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	Client Sample ID:	SSAS3-RAP10-SS05-0/3	SSAS3-RAP10-SS06-0/3	SSAS3-RAP10-SS07-0/3	SSAS3-RAP10-SS08-0/3
	Location:	Residential Property 10	Residential Property 10	Residential Property 10	Residential Property 10
	Depth Range:	0 to 3 inches	0 to 3 inches	0 to 3 inches	0 to 3 inches
	Sample Type:	Field Sample	Field Sample	Field Sample	Field Sample
	Lab Sample ID:	A8L230155005	A8L230155006	A8L230155007	A8L230155008
	EPA Sample ID:	CPK6H	CPK6K	CPK6M	CPK6Q
	Sample Type:	N1	N1	N1	N1
	Sampling Date:	12/21/98	12/21/98	12/21/98	12/21/98
Compound	**Relative Potency**				
Benzo(a)anthracene (ug/kg)	0.1	11000	9900	6900	7600
Benzo(a)pyrene (ug/kg)	1	12000	11000	8600	9300
Benzo(b)fluoranthene (ug/kg)	0.1	16000	13000	11000	12000
Benzo(k)fluoranthene (ug/kg)	0.01	5500	5100	4400	4000
Chrysene (ug/kg)	0.001	11000	9700	7700	8200
Dibenz(a,h)anthracene (ug/kg)	1	1000 J1	1300	760 J1	560 J1
Indeno(1,2,3-cd)pyrene (ug/kg	0.1	4700	5400	4100	3600
Benzo(a)pyrene (ug/kg)		12000	11000	8600	9300
Total BAP equivalents (ug/kg)		16236	15191	11612	12228
Total BAP equivalents (mg/kg)		16.24	15.19	11.61	12.23

J1: Estimated value - Less than reporting limit.

SECTION 4
DATA EVALUATION

4.1 OVERVIEW OF THE RESIDENTIAL AREA SAMPLING AND ANALYSIS PROGRAMS

To understand the implications of the Phase III RASAP relative to the EE/CA residential remedial evaluation process, it is important that the overall residential area assessment approach be understood. At the beginning of the residential area study, ERM-North Central, Inc. (ERM) executed a residential area sampling program (hereinafter referred to as the Phase I RASAP).

The Phase I RASAP encompassed over 100 soil samples collected from 57 residential properties located at varying distances from the Site. ERM collected composited surface soil samples from the zero to three-inch depth from each sampled property. A risk assessment was performed using the information generated from the Phase I RASAP, resulting in the report entitled "*Deterministic and Probabilistic Calculations to Estimate Risk-Based Cleanup Goals for Soils at Residences near the 2800 South Sacramento Avenue Site, Chicago, Illinois,*" Alceon Corporation, October 25, 1996 (also referred to as the residential area risk assessment).

Cox Associates (Cox) assessed the ERM residential data to determine the distance from the Site at which carcinogenic PAH levels (expressed as [B(a)P] equivalents) in surface soils become statistically indistinguishable from urban background levels. This study was presented as an appendix to the residential area risk assessment.

The Cox study assessed the limits of Site-related contamination in the residential neighborhoods surrounding the Site and concluded that a reasonable boundary for the outer limit of the area of impact could be set at a radius of 1,100 feet for the northwest and southwest quadrants, and at a radius of 1,300 feet for the northeast quadrant. Cox also performed various statistical evaluations of the Phase I data, using an adaptive

partitioning technique and spatial statistical methods. Cox determined that the only residential area that should be further assessed for potential impact from former Site activities is the area located within 1,300 feet of the center of the Site, in the north-northeast octant.

Based on the Phase I data, it was determined that risk management decisions relative to potential residential impacts and remedial requirements would be difficult to assess, primarily because soil PAH concentrations are highly variable, even on the same residential property. While data generated from soil sample collection activities at two different properties may suggest that one property is more contaminated than the other, collecting a second set of soil samples from the same two properties may reverse their ranking. In addition, the concentration of B(a)P equivalents among background surface soil locations appeared to overlap with the concentration of B(a)P equivalents among foreground surface soil locations. Thus, some background locations have higher B(a)P equivalent levels than some foreground locations.

Given these issues, the task of evaluating the 48 homes in the foreground area to determine which ones, if any, might require remediation, would be extremely difficult. To facilitate the decision process, an adaptive sampling program was developed by Cox. The basic premise of adaptive sampling is two-fold: (1) high contaminant concentrations are most likely to be found in the neighborhood of other already-discovered high concentrations, and (2) initial random sampling followed by exploration in the vicinity of the highest concentrations yet discovered, provides an effective way to focus evaluation efforts.

The Phase II RASAP Parsons ES performed in February 1998, was executed in accordance with protocols outlined in the "*Residential Area Conceptual Work Plan*," Parsons ES, May 1997, and was based on the adaptive sampling program developed by Cox. The data generated from the Phase II RASAP identified several apparent concentration "spikes" (values several times greater than the mean) in the new, non-

composited soil sample data. The magnitude and locations of these spikes suggested that:

1. The variability of B(a)P equivalents in residential area soils might be even greater than had initially been estimated based on the Phase I RASAP data.
2. The concentration spikes might not be related to the Site.

Given these findings, the Respondents proposed to the USEPA Region V that additional non-composited surface soil sampling at several randomly-selected locations (both "foreground" and "background") be performed to better understand and characterize the spatial distribution and variability of soil PAH concentrations in non-composited samples. This additional sampling effort would also provide a further check on how well the adaptive sampling process had succeeded in identifying the most contaminated residential properties.

With the approval of the USEPA Region V, in December 1998, Parsons ES performed the Phase III RASAP to address these additional issues. The following sections present discussions of the interpretation and implications of the RASAP data generated as part of this EE/CA.

4.2 COMPARISON OF RASAP BACKGROUND DATA

"Background" locations are defined, for purposes of this project, as locations at which there is no evidence that soil concentrations have been affected by the Site. To date, two sets of data relevant to the determination of the frequency distribution of B(a)P soil concentrations among "background" locations have been analyzed for this project. The two data sets are:

1. The 65 composited soil sample data obtained by ERM during the Phase I RASAP. These data are shown in Tables 4.1 and 4.2. Only locations outside 1,300 feet are shown, as these locations were previously determined to probably include most of the background and none of the foreground locations.

2. The new, non-composited soil sample data collected during the Phase III RASAP. Table 4.3 reproduces the non-composited sample data for the 10 newly sampled properties. As stated previously, these data were collected from six background and four foreground residential properties.

The mean of the 65 composited soil sample data is 3.32 parts per million (ppm) (within a 95% confidence interval (CI) of 2.5 to 4.1 ppm). The frequency distribution of PAH soil sample concentrations from the 65 composited soil sample data has an upper 5% tail (designated by the top three data points) ranging from 8.125 to 26 ppm.

By contrast, the non-composited soil sample data show greater variability within residential properties. The mean of the 53 non-composited sample data collected from the six background properties is 2.3 ppm (within a 95% CI of 1.72 to 2.9 ppm). The frequency distribution of PAH values for this data has an upper 5% tail ranging from 5.5 to 13 ppm. However, variability at discrete locations within individual properties is significant (Refer to Figures 2.2 to 2.11). Thus, it is likely that if non-composited soil sample data were collected for more than six background properties, the frequency distribution of the observed values would be much wider.

While a mean value of about 3 ppm, plus or minus 1 ppm, is realistic for the background soil concentration, when the non-composited soil sample data from the six background properties are assessed along with ERM's 65 composited soil sample background data, "spike" values in excess of 10 ppm are observed. Values greater than 20 or even 30 ppm could occur, but are expected to be relatively rare.

4.3 MAIN FINDINGS FROM THE ANALYSIS OF THE PHASE III RASAP NON-COMPOSITED SOIL SAMPLE DATA

The analysis of the Phase III RASAP non-composited soil sample data presented in Table 4.3 reveals several data trends. These trends are summarized below:

- ***High Variability:*** Variability among non-composited soil samples taken from the same residential property was confirmed to be very high, with sample values from the same property spanning a range of less than a factor of 2 (for

property B4) to over a factor of 5 for the six background properties (properties B2, B3, and B5). Refer to Table 4.3.

Among the four foreground properties, the variability of the sampled values within individual properties was even higher, with a high-to-low ratio of about 9 for property F7 and over 20 for property F9. An implication of this high variability is that ranking properties by the means, medians, upper confidence limits, lower confidence limits, greatest observed sample values, and smallest observed sample values of their soil concentration distributions, all give different rankings.

- ***Range of Values:*** None of the randomly sampled foreground properties had mean values (or medians, or 95% upper confidence limits) above 28 ppm. All four of the foreground properties have all their key statistics above 2.8 ppm. Thus, all the key values in the foreground samples fall within roughly one order of magnitude.

  For comparison, among the four properties previously identified by the adaptive spatial sampling protocol (Phase II RASAP), which deliberately sought the probable locations of the most-contaminated properties, one property had a mean value of 37 ppm and another had a mean value of 85 ppm. Thus, adaptive sampling was effective in finding especially contaminated locations, consistent with the "worst-first" approach.

- ***Overlap of Foreground and Background Distributions:*** Background and foreground PAH concentration distributions overlap, with some sampled values in background locations exceeding some sampled values in foreground locations. For example, all four foreground properties had soil concentration distributions that overlapped with the distribution of background location B2. Two of the four foreground properties (properties F7 and F9) had soil concentration distributions that overlapped with the distributions of all six background properties.

- ***Spikes:*** One of the six background properties (B2) contained a concentration spike that gave it a higher mean than one of the foreground locations. Thus, the possibility of such spikes among background locations raises troubling issues in terms of considering foreground locations for remediation.

Table 4.3 summarizes the Phase II and III RASAP B(a)P equivalent sample data based on various statistics, and Figure 4.1 displays this statistical information on a property-by-property basis.

4.4 SUMMARY

As indicated by the previous discussions, the new data (Phase III RASAP data) tend to support the calculations and approaches taken in this project to date. The findings confirm the presence of high variability of PAH concentrations in surface soils; the possibility of spikes in the data (even among background locations); and a relatively narrow range (about 1 order of magnitude) for mean and median concentrations.

The practical implication of these data findings is significant. A relatively small shift in the target concentration (or risk levels) used to determine further investigative actions or to set future remediation priorities - by about one order of magnitude - may make the difference between viewing with concern almost all residential properties within the foreground locations versus only a small number of properties identified by the Phase II RASAP adaptive sampling strategy.

TABLE 4.1
SUMMARY OF ERM DATA FOR BACKGROUND LOCATIONS
SORTED BY DISTANCE

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	MAP ID	EASTDIST	NORTHDIS	DISTANCE	BAPEQ (ppm)
1	ID53	-1207.33	598.913	1347.715	.651
2	ID68	-712.327	1208.913	1403.168	5.918
3	ID69	-592.327	1288.913	1418.502	2.666
4	ID70	-592.327	1288.913	1418.502	3.532
5	ID63	-712.327	1248.913	1437.774	2.240
6	ID65	-712.327	1248.913	1437.774	3.194
7	ID64	-712.327	1248.913	1437.774	3.410
8	ID66	-712.327	1248.913	1437.774	1.623
9	ID67	-712.327	1248.913	1437.774	3.575
10	ID47	-1427.33	-341.087	1467.516	3.831
11	ID56	-1452.33	288.913	1480.785	2.391
12	ID55	-1452.33	288.913	1480.785	4.537
13	ID54	-1452.33	288.913	1480.785	3.751
14	ID57	-1452.33	288.913	1480.785	1.718
15	ID234	-1542.33	408.913	1595.613	.798
16	ID235	-1647.33	408.913	1697.320	2.124
17	ID27	28.673	1700.913	1701.155	2.155
18	ID89	-617.327	1616.913	1730.751	3.011
19	ID90	-617.327	1616.913	1730.751	5.146
20	ID86	-1262.33	1200.913	1742.315	1.983
21	ID88	-1262.33	1200.913	1742.315	1.905
22	ID87	-1262.33	1200.913	1742.315	2.027
23	ID91	-122.327	1802.913	1807.058	5.034
24	ID29	209.673	1812.913	1824.998	4.906
25	ID28	209.673	1812.913	1824.998	5.514
26	ID84	-297.327	1829.913	1853.911	2.222
27	ID85	-297.327	1829.913	1853.911	1.144
28	ID83	-297.327	1829.913	1853.911	1.619
29	ID79	-967.327	1589.913	1861.060	2.415
30	ID18	198.673	1870.913	1881.432	5.006
31	ID19	198.673	1870.913	1881.432	4.290
32	ID236	-1842.33	-476.087	1902.847	1.171
33	ID31	705.673	1770.913	1906.333	8.125

TABLE 4.1
SUMMARY OF ERM DATA FOR BACKGROUND LOCATIONS
SORTED BY DISTANCE

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	MAP ID	EASTDIST	NORTHDIS	DISTANCE	BAPEQ (ppm)
34	ID30	705.673	1770.913	1906.333	26.019
35	ID20	439.673	1906.913	1956.944	2.415
36	ID21	439.673	1906.913	1956.944	2.849
37	ID22	439.673	1906.913	1956.944	3.623
38	ID239	-2012.33	603.913	2100.993	1.898
39	ID82	-527.327	2061.913	2128.276	2.633
40	ID81	-527.327	2061.913	2128.276	2.425
41	ID80	-527.327	2061.913	2128.276	2.114
42	ID78	-1386.33	1627.913	2138.224	1.531
43	ID237	-2177.33	-356.087	2206.253	1.798
44	ID32	1303.673	1825.913	2243.551	3.956
45	ID23	747.673	2133.913	2261.106	2.672
46	ID238	-2297.33	-216.087	2307.467	9.010
47	ID73	-1401.33	1865.913	2333.527	3.388
48	ID25	1303.673	1943.913	2340.590	4.545
49	ID26	1303.673	1943.913	2340.590	4.873
50	ID15	676.673	2246.913	2346.594	2.901
51	ID17	676.673	2246.913	2346.594	3.223
52	ID16	676.673	2246.913	2346.594	4.741
53	ID14	172.673	2363.913	2370.211	2.944
54	ID72	-1712.33	1669.913	2391.793	1.740
55	ID71	-1712.33	1669.913	2391.793	2.286
56	ID77	-331.327	2400.913	2423.667	1.966
57	ID24	1110.673	2157.913	2426.970	2.168
58	ID74	-768.327	2328.913	2452.379	1.644
59	ID75	-768.327	2328.913	2452.379	3.840
60	ID76	-768.327	2328.913	2452.379	1.485
61	ID240	-3007.33	528.913	3053.484	1.704
62	ID244	-2917.33	-1241.09	3170.346	1.889
63	ID243	-2917.33	-1241.09	3170.346	1.849
64	ID200	514.673	6564.913	6585.057	.664
65	ID229	514.673	6564.913	6585.057	1.921

TABLE 4.2
SUMMARY OF ERM DATA FOR BACKGROUND LOCATIONS
SORTED BY SOIL CONCENTRATIONS

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	MAP ID	EAST	NORTH	DISTANCE	BAPEQ (ppm)
1	ID53	-1207.33	598.913	1347.715	.651
2	ID200	514.673	6564.913	6585.057	.664
3	ID234	-1542.33	408.913	1595.613	.798
4	ID85	-297.327	1829.913	1853.911	1.144
5	ID236	-1842.33	-476.087	1902.847	1.171
6	ID76	-768.327	2328.913	2452.379	1.485
7	ID78	-1386.33	1627.913	2138.224	1.531
8	ID83	-297.327	1829.913	1853.911	1.619
9	ID66	-712.327	1248.913	1437.774	1.623
10	ID74	-768.327	2328.913	2452.379	1.644
11	ID240	-3007.33	528.913	3053.484	1.704
12	ID57	-1452.33	288.913	1480.785	1.718
13	ID72	-1712.33	1669.913	2391.793	1.740
14	ID237	-2177.33	-356.087	2206.253	1.798
15	ID243	-2917.33	-1241.09	3170.346	1.849
16	ID244	-2917.33	-1241.09	3170.346	1.889
17	ID239	-2012.33	603.913	2100.993	1.898
18	ID88	-1262.33	1200.913	1742.315	1.905
19	ID229	514.673	6564.913	6585.057	1.921
20	ID77	-331.327	2400.913	2423.667	1.966
21	ID86	-1262.33	1200.913	1742.315	1.983
22	ID87	-1262.33	1200.913	1742.315	2.027
23	ID80	-527.327	2061.913	2128.276	2.114
24	ID235	-1647.33	408.913	1697.320	2.124
25	ID27	28.673	1700.913	1701.155	2.155
26	ID24	1110.673	2157.913	2426.970	2.168
27	ID84	-297.327	1829.913	1853.911	2.222
28	ID63	-712.327	1248.913	1437.774	2.240
29	ID71	-1712.33	1669.913	2391.793	2.286
30	ID56	-1452.33	288.913	1480.785	2.391
31	ID20	439.673	1906.913	1956.944	2.415
32	ID79	-967.327	1589.913	1861.060	2.415
33	ID81	-527.327	2061.913	2128.276	2.425

TABLE 4.2
SUMMARY OF ERM DATA FOR BACKGROUND LOCATIONS
SORTED BY SOIL CONCENTRATIONS

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

	MAP ID	EASTDIST	NORTHDIS	DISTANCE	BAPEQ (ppm)
34	ID82	-527.327	2061.913	2128.276	2.633
35	ID69	-592.327	1288.913	1418.502	2.666
36	ID23	747.673	2133.913	2261.106	2.672
37	ID21	439.673	1906.913	1956.944	2.849
38	ID15	676.673	2246.913	2346.594	2.901
39	ID14	172.673	2363.913	2370.211	2.944
40	ID89	-617.327	1616.913	1730.751	3.011
41	ID65	-712.327	1248.913	1437.774	3.194
42	ID17	676.673	2246.913	2346.594	3.223
43	ID73	-1401.33	1865.913	2333.527	3.388
44	ID64	-712.327	1248.913	1437.774	3.410
45	ID70	-592.327	1288.913	1418.502	3.532
46	ID67	-712.327	1248.913	1437.774	3.575
47	ID22	439.673	1906.913	1956.944	3.623
48	ID54	-1452.33	288.913	1480.785	3.751
49	ID47	-1427.33	-341.087	1467.516	3.831
50	ID75	-768.327	2328.913	2452.379	3.840
51	ID32	1303.673	1825.913	2243.551	3.956
52	ID19	198.673	1870.913	1881.432	4.290
53	ID55	-1452.33	288.913	1480.785	4.537
54	ID25	1303.673	1943.913	2340.590	4.545
55	ID16	676.673	2246.913	2346.594	4.741
56	ID26	1303.673	1943.913	2340.590	4.873
57	ID29	209.673	1812.913	1824.998	4.906
58	ID18	198.673	1870.913	1881.432	5.006
59	ID91	-122.327	1802.913	1807.058	5.034
60	ID90	-617.327	1616.913	1730.751	5.146
61	ID28	209.673	1812.913	1824.998	5.514
62	ID68	-712.327	1208.913	1403.168	5.918
63	ID31	705.673	1770.913	1906.333	8.125
64	ID238	-2297.33	-216.087	2307.467	9.010
65	ID30	705.673	1770.913	1906.333	26.019

TABLE 4.3
TOTAL BAP EQUIVALENTS RESULTS FROM THE PHASE III RASAP NON-COMPOSITE SOIL SAMPLING EVENT

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

B1	B2	B3	B4	B5	B6	F7	F8	F9	F10
RAP-1	RAP-2	RAP-3	RAP-4	RAP-5	RAP-6	RAP-7	RAP-8	RAP-9	RAP-10
5.46	13.05	5.44	2.74	2.74	2.19 *	9.10	39.54	12.73	16.24
3.47 *	9.72	3.30	2.73	2.63	1.29 **	5.65	24.78	11.69	15.19
3.32	2.68	2.72	2.59	0.78	1.10	4.56	23.12 *	10.83	12.23
3.18	2.31	2.57	2.07	0.57	1.09	3.59	21.49 **	10.29	11.61
2.90 **	2.15	1.98	2.04	0.42	0.88	3.59 *	20.57	4.84 *	10.18
2.49	1.92 **	1.93	1.93	0.39	0.87	3.12 **	18.85	4.84 **	9.03
2.32	1.91	1.42	1.89 **	0.36	0.86	2.34	13.74	3.41	7.40
2.21	1.86 *	0.90 **	1.45	0.32	0.81	1.20	12.25	1.07	6.97
2.07	1.80	0.85 *	1.41 *						

Notes

All units are mg/kg
B1 to B6 = "background" locations
F7 to F10 = "foreground" locations

* This investigative sample result has an associated duplicate sample result that is identified by the double asterisk (**).

** This is the duplicate sample result for the investigative sample identified with the asterisk (*).

TABLE 4.4

ASSESSMENT OF BAP EQUIVALENTS DATA FROM THE PHASE II AND III RASAP EVENTS BASED ON VARIOUS STATISTICS

2800 SOUTH SACRAMENTO AVENUE SITE CHICAGO, ILLINOIS 60623

Residential Properties	Mean (ppm)	-95% CI (ppm)	+95% CI (ppm)	Median (ppm)	Minimum (ppm)	Maximum (ppm)
B1	3.05	2.25	3.84	2.90	2.07	5.46
B2	4.16	0.93	7.38	2.15	1.80	13.05
B3	2.35	1.25	3.44	1.98	0.85	5.44
B4	2.09	1.71	2.48	2.04	1.41	2.74
B5	1.03	0.16	1.89	0.50	0.32	2.74
B6	1.07	0.71	1.43	0.88	0.57	2.19
F7	3.79	1.88	5.70	3.59	0.99	9.10
F8	20.64	14.06	27.23	20.57	11.44	39.54
F9	6.70	3.08	10.32	4.84	0.60	12.73
F10	11.11	8.27	13.94	10.90	6.97	16.24
AF11	84.96	(-27.81)	197.72	34.70	21.10	473.80
AF12	21.39	14.15	28.62	19.60	9.60	39.80
AF13	36.99	32.65	41.33	34.90	30.00	47.20
AF14	9.32	5.43	13.21	9.40	2.90	17.50

TABLE 4.4 (CONTINUED)

ASSESSMENT OF BAP EQUIVALENTS DATA FROM THE PHASE II AND III RASAP EVENTS BASED ON VARIOUS STATISTICS

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS 60623

Notes

"Mean" refers to the mean B(a)P equivalent concentration for each property.

"CI" refers to the confidence interval.

"Median" refers to the median B(a)P equivalent concentration for each property.

"Minimum" and "Maximum" refer to minimum and maximum B(a)P equivalent concentration at each property.

Phase II RASAP properties: AF11 through AF14 (Foreground Area).

Phase III RASAP properties: B1 through B6 (Background Area) and F7 through F10 (Foreground Area).

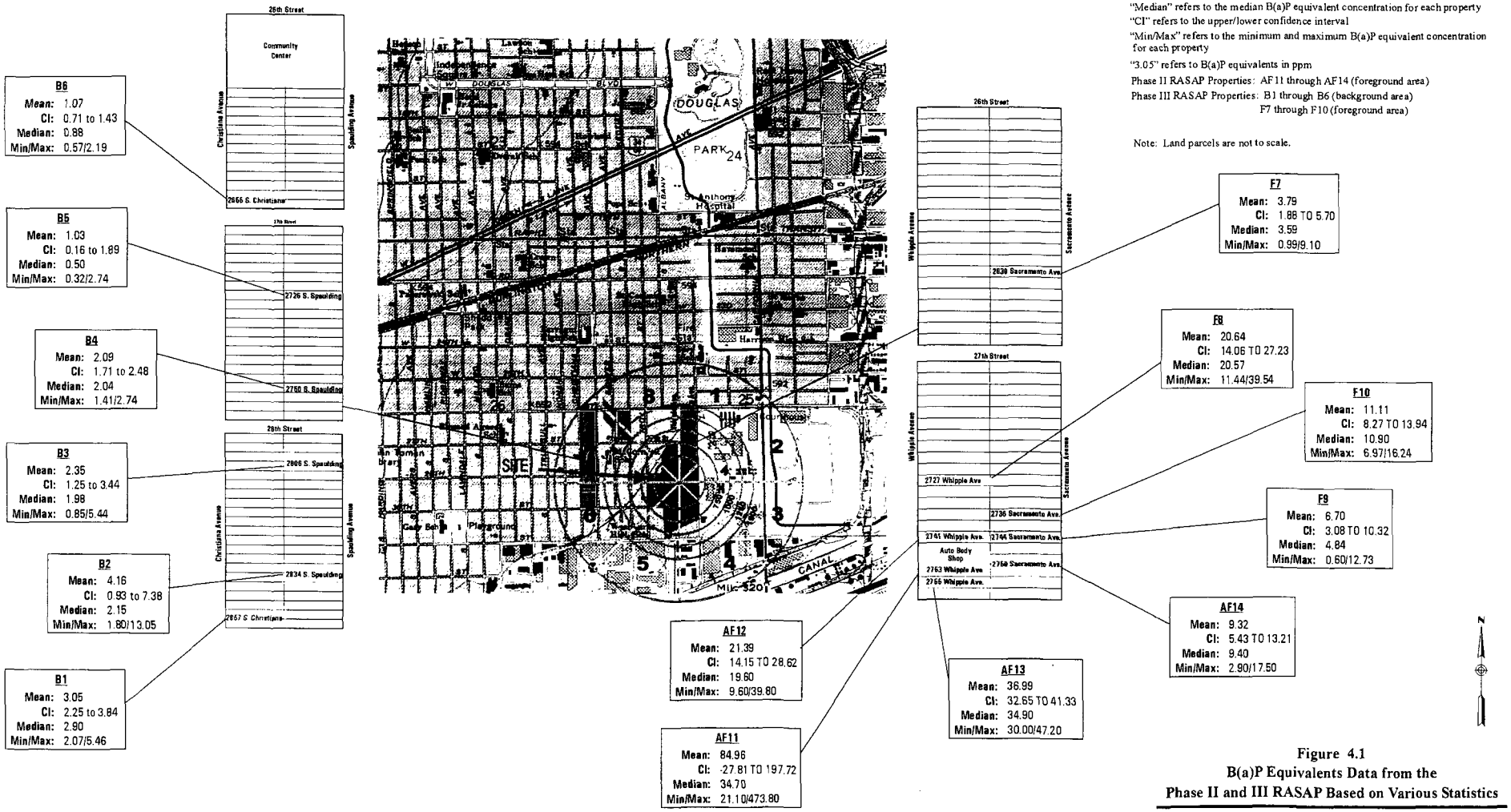

Figure 4.1
B(a)P Equivalents Data from the Phase II and III RASAP Based on Various Statistics

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PARSONS ENGINEERING SCIENCE, INC.

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